Micropolitics of poverty : how randomized controlled trials address global poverty through the epistemic and political fragmentation of the world

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Micropolitique de la pauvreté

La fragmentation épistémique et politique du monde par les essais randomisés contrôlés

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Outline of the dissertation

Table of illustrations

Acronyms and abbreviations

AEA	American Economic Association
AMC	Advance Market Mechanism
CEO	Chief Executive Officer
CIDA	Canadian International Development Agency
DIME	Department for Impact Evaluation
DfID	Department for International Development
EvaP	Evidence against Poverty
FAO	Food and Agriculture Organization
GAVI	Global Alliance for Vaccines and Immunization
GDP	Gross Domestic Product
IMF	International Monetary Fund
IPA	Innovations for Poverty Action
J-PAL	Jameel Poverty Action Lab
LED	Light-Emitting Diode
MDG	Millennium Development Goals
MIT	Massachusetts Institute of Technology
RCT	Randomized Controlled Trials
SAP	Structural Adjustment Programs
SDG	Sustainable Development Goals
STS	Science and Technology Studies
UN	United Nations
USA or US	United States of America
USAID	United States Agency for International Development

Résumé de la thèse

La thèse porte sur les évolutions contemporaines de l'action contre la pauvreté dite « globale », c'est-à-dire celle qui touche les habitants les plus pauvres des pays en développement. Ces évolutions sont examinées par le prisme d'un dispositif d'évaluation qui s'est imposé, en dépit d'âpres controverses, comme une référence en termes de rigueur scientifique pour identifier les interventions de lutte contre la pauvreté qui présentent le meilleur rapport coût/efficacité. La méthode des expérimentations randomisées contrôlées (ou expérimentations aléatoires), adaptée de celle des essais cliniques, est décrite par ses champions comme le possible fer de lance d'une réforme épistémologique, politique et morale de la lutte contre la pauvreté. Si ces expérimentations sont loin d'être une pratique majoritaire, elles n'en ont pas moins reconfiguré les pratiques de lutte contre la pauvreté. Le problème de l'articulation entre la production de connaissances et l'action politique est classique, mais la thèse l'aborde à nouveaux frais, en opérant une série décalages inspirés des STS.

Empiriquement, la thèse s'appuie sur la description ethnographique dense d'une expérimentation aléatoire menée dans un pays d'Afrique de l'Est. L'expérimentation observée, le projet Kianga Energy, est menée par un groupe d'économistes, le Research Group 5, et sa mise en œuvre matérielle est assurée par Evidence against Poverty, une organisation internationale spécialisée dans la mise en œuvre d'expérimentations aléatoires. L'expérimentation évalue l'impact de la distribution de lampes solaires dans des villages non-électrifiés. Une entreprise sociale, Kianga Energy Ltd., distribue des lampes solaires dans des villages non-électrifiés d'un pays d'Afrique de l'Est. Son modèle économique repose sur la vente de lampes à très bas prix, en anticipant à plus long terme un flux continu de revenus générés par la vente régulière d'un service de recharge des batteries des lampes et des téléphones portables des clients. Ce service est assuré dans chaque village par un groupe de quatre micro-entrepreneurs, c'est-à-dire par quatre villageois équipés d'une station de recharge, composée d'une batterie, d'un panneau solaire et d'une dynamo à pédales. En guise de rémunération, les micro-entrepreneurs conservent la moitié des recettes générées par la vente des recharges.

Le **premier chapitre** annonce l'argument de la thèse : les expérimentations contrôlées randomisées produisent une micropolitique de la pauvreté. La notion de micropolitique hérite en partie des travaux de Michel Foucault d'une part et de Gilles Deleuze et Félix Guattari d'autre part. La première section du chapitre clarifie la manière dont je m'inspire de ces auteurs pour définir une micropolitique de la pauvreté. Je définis la micropolitique comme une approche qui consiste à produire des fragments épistémiques et politiques à l'intérieur desquels le problème de la pauvreté globale est confiné, à la fois sur un plan analytique et sur un plan politique.

La suite du chapitre discute la méthodologie des expérimentations contrôlées randomisées, fondée sur la comparaison entre un groupe « traité », faisant l'objet d'une politique de lutte contre la pauvreté, et d'un groupe de contrôle, ne recevant aucun « traitement ». Cette méthode permet, selon ses promoteurs, d'isoler rigoureusement l'impact de l'intervention testée. En dramatisant l'importance d'évaluer rigoureusement, les expérimentations contrôlées randomisées ont accentué certaines explications causales (micro, locales, comportementales) de la pauvreté au détriment d'autres (structurelles, globales, historiques), laissées dans l'ombre parce qu'elles ne sont pas solubles dans le dispositif expérimental. L'enquête, ainsi restreinte aux personnes pauvres et à leur environnement immédiat, exclut de l'espace des causes le rôle des pays riches, d'où sont formulées les politiques de lutte contre une pauvreté pourtant dite « globale ».

En effet, ces expérimentations reposent sur l'idée que pour comprendre la pauvreté, il suffit d'enquêter sur les pauvres, leurs comportements, la manière dont ils prennent des décisions. Cette mise en équivalence n'est toutefois pas propre à l'approche expérimentale, elle s'inscrit dans une tradition de production de connaissance sur la pauvreté qui récusent l'approche de l'économie politique (O'Connor, 2002). D'autre part, ces expérimentations sont menées sur un espace restreint (souvent, quelques centaines de villages géographiquement proches les uns des autres) et dans le temps limité de deux ou trois ans au maximum. Le dispositif expérimental, par construction, exclut les potentielles causes structurelles ou historiques de la pauvreté, pour se concentrer sur des causes locales et immédiates. L'expérimentation est fondée sur une vision très peu relationnelle de la pauvreté (Webber, 2015), qui sape à la fois la possibilité d'une réflexion historique et d'une analyse géopolitique de la pauvreté. A la fragmentation épistémique des causes de la pauvreté répond le confinement politique des solutions envisagées. En confinant les causes de la pauvreté dans un espace-temps très limité, ces expérimentations

produisent un effet sur la conception des politiques de lutte contre la pauvreté, qui ne questionnent que le mode de vie et les pratiques des pauvres.

Le **deuxième chapitre** analyse le travail des enquêteurs de terrain, qui mettent en œuvre les expérimentations aléatoires dans les villages et qui collectent les données expérimentales. La mise en place matérielle d'une expérimentation aléatoire est complexe et laborieuse ; elle requiert de dépêcher des équipes d'enquêteurs dans des villages reculés, auprès des pauvres sur lesquels les chercheurs souhaitent expérimenter. Par quelles opérations une intervention de lutte contre la pauvreté est-elle transformée en un objet propre à l'expérimentation ? Comment les villages sont-ils « laboratorisés », c'est-à-dire rendus carrossables, lisibles et connaissables ? Les enquêteurs, embauchés par Evidence against Poverty sur des contrats précaires, accomplissent un travail difficile, qui relève à la fois de la logistique, de l'enquête (au sens plein du terme) et de la diplomatie. Ils permettent à l'expérimentation d'avoir lieu, malgré les nombreuses frictions résultant de la rencontre entre les villageois et une expérimentation conçue sans connaissance préalable des lieux. Le chapitre décrit d'abord un processus d'exploration et d'acheminement : comment une expérimentation conçue de loin, par des économistes ne connaissant pas le terrain, arrive dans des villages ruraux isolés qui ne figurent même pas sur les cartes ? Le travail de terrain accompli par les enquêteurs de terrain prend la forme d'une expédition scientifique.

Je décris ensuite les opérations relatives à la collecte des données. Les enquêteurs sont contraints, d'une part, par un questionnaire long, compliqué et fastidieux, rédigé de loin, par des économistes ne connaissant pas le terrain. D'autre part, ils font face à des villageois qui ne comprennent pas les questions, où n'ont pas envie d'y répondre, qui peuvent être heurtés, choqués ou rendus perplexes par certaines questions. Je propose la notion de « fiction ancrée » pour décrire le type de données que les enquêteurs parviennent à produire malgré tout. En adoptant un rôle actif à la fois dans la formulation des questions et dans celle des réponses, ils parviennent à combler le fossé qui sépare les économistes de leur terrain.

Enfin, je décris les interactions qui se glissent dans les interstices et les temps faibles des journées que les enquêteurs passent au village. Je décris les effets subtils de la mise en présence des enquêteurs, de jeunes diplômés de la ville qui parlent anglais et pianotent sur des smartphones, avec des villageois qui pratiquent une agriculture vivrière. Je pose la question suivante : n'est-ce pas l'expérimentation elle-même, et les rencontres qu'elle implique, plutôt que l'intervention testée, qui produit des effets sur le terrain ?

Le **troisième chapitre** décrit précisément le projet Kianga Energy, qui est tentaculaire et qui est en fait composé de plusieurs expérimentations aléatoires emboîtées. Le chapitre présente les protagonistes du Research Group 5 et relate la manière dont j'ai négocié mon accès au terrain auprès d'eux. La description des relations difficiles des économistes avec le principal bailleur du projet, Womenergy fournit l'occasion d'exposer des visions divergentes de l' « *evidence-based policy* », la politique fondée sur des données probantes. Les économistes proposent une certaine façon d'articuler la production de connaissances et l'utilisation de ces connaissances pour informer la conception de politiques de lutte contre la pauvreté qui ne convient pas à Womenergy.

Dans la suite du chapitre, je me concentre sur le travail accompli par les économistes du Research Group 5 sur une composante du projet : l'*empowerment* des femmes à travers la participation à une micro-entreprise. Je décris le travail épistémique et politique accompli par les économistes autour de la notion d'*empowerment*. J'analyse la manière dont leurs questions de recherches sont transformées en objets d'expérimentation, et donc d'intervention sociale. Le hiatus permanent entre l'expérimentation comme instrument visant à produire de la connaissance et comme mode d'intervention sociale pose des difficultés que le Research Group 5 ne parvient pas à résoudre. En tentant de produire des résultats répondant à des questions théoriques issues de la littérature scientifique, ils conçoivent des expérimentations qui ne sont plus du tout pertinentes, voire absurdes dans le contexte des villages. A l'inverse, certaines composantes de l'intervention qui semblent plus adéquates en tant qu'interventions sociales ne fonctionnent pas en tant que dispositifs heuristiques.

Le chapitre discute enfin de la manière dont les politiques de lutte contre la pauvreté ont construit une figure féminine du pauvre global, utilisée de manières fort différentes par divers protagonistes qui ont des interprétations divergentes de l'*empowerment* des femmes. Le chapitre discute également la forte dimension d'ingénierie sociale qui imprègne le projet Kianga Energy.

Le **quatrième chapitre** décrit deux composantes du projet Kianga Energy portant sur les prix. Le Research Group 5 met en place deux expérimentations, fonctionnant en diptyque, afin de produire un couple de prix (prix d'une lampe ; prix d'une recharge) qui permette à Kianga Energy Ltd d'être rentable tout en continuant de distribuer ses lampes à une clientèle très pauvre, soumise à une contrainte budgétaire extrêmement forte. Ces expérimentations consistent à estimer la propension moyenne à payer des villageois pour une lampe, puis pour

un service de recharge de batterie. Je propose de décrire le processus expérimental d'élaboration du prix en termes de fabrication de mondes-{prix}.

L'expérimentation dite « des bons de réductions » teste la propension des villageois à payer pour une lampe[1]. Concrètement, il s'agit d'organiser une vente de lampes dans chaque village, en mettant en circulation plusieurs prix pour le même objet. Comment comprendre la mise en circulation simultanée de huit prix différents pour un même objet dans le même village ? Il faut revenir sur le principe de l'assignation aléatoire, qui dans ce cas est utilisé non seulement pour former un groupe traité et un groupe de contrôle, mais aussi pour former, à l'intérieur du groupe traité, huit sous-groupes recevant des traitements différents. Ces huit groupes formés aléatoirement sont contrefactuels les uns des autres : chacun est supposément similaire aux autres et représentatif de l'échantillon expérimental. Ce dispositif permet de feuilleter chaque village en huit couches superposées, et ce faisant, de tester, simultanément et sur le même espace géographique, huit prix au lieu d'un seul.

La démultiplication des mondes (et des prix) opérée par l'expérimentation n'est qu'une situation temporaire, qui vise en fait à construire un prix unique. Chacun des huit mondes-{prix} défini par l'expérimentation offre un espace de tri entre ceux qui sont disposés à payer le prix proposé et ceux qui ne le sont pas, et permet le calcul, très simple, d'une proportion d'acheteurs. Ainsi, de l'espace virtuellement unifié et démultiplié des villages sont extraites huit proportions, une par catégorie de prix, dont la mise en série permet d'estimer l'élasticité de la demande par rapport au prix des lampes. Conformément aux attentes des économistes et à l'intuition des énumérateurs, la demande est extrêmement sensible au prix, et chute très rapidement à mesure qu'il augmente.

De la description de cette vente, il faut souligner la manière dont les prix payés sont détachés des qualités de la lampe mise en vente. Ce n'est qu'une fois la transaction conclue que les villageois découvrent enfin à quoi ressemble leur lampe, et qu'ils peuvent confronter ses qualités au prix payé. Certains déchantent, trouvant dans la boîte une lampe déchargée, déçus de la petite taille de l'objet, ou encore, comme ce vieillard, se trouvant incapable de presser le bouton interrupteur faute de force dans les doigts. Bien sûr, on comprend que la connexion entre les qualités de la lampe et les prix ne soit pas mise en valeur. Le hiatus entre un produit unique et la multiplicité des prix en circulation dans le village ne deviendrait-il pas trop fort ?

[1] L'expérimentation dite « des coupons » procède de manière très similaire, mais elle teste le prix d'un service de recharge de batterie, et non pas le prix d'une lampe solaire.

Mais cela suggère autre chose : au fond, les villageois n'achètent pas des lampes, ils achètent des prix. Jusqu'à la fin de la transaction, les prix ont une existence matérielle bien plus tangible que celle des lampes : inscrits sur les bons de réduction, organisant la disposition des lampes dans des boîtes en carton étiquetées au marqueur noir. Je pose la question suivante : et si les expérimentations testaient, plutôt que des prix, la capacité des villageois à se comporter comme des payeurs ?

Le **cinquième chapitre** se concentre sur la nature des interventions évaluées. Les expérimentations randomisées contrôlées tendent à tester des interventions de petite taille et peu coûteuses, qui visent à équiper les pauvres matériellement ou cognitivement, afin de modifier leurs pratiques quotidiennes, la façon dont ils calculent, établissent leurs priorités ou prennent des décisions. Les petits dispositifs techniques conçus à destination des pauvres sont de plus en plus souvent vendus plutôt que distribués gratuitement. Et c'est dans la commercialisation de ces objets que se joue le sens de l'intervention.

En effet, le principal n'est pas de vendre un objet, mais de « traiter » une population déterminée, de faire en sorte qu'elle modifie ses pratiques en adoptant de nouveaux objets ou de nouveaux services. C'est particulièrement clair dans le cas du projet Kianga Energy : la vente des lampes solaires est censée produire tout un ensemble d'effets vertueux en substituant un dispositif d'éclairage jugé propre à l'utilisation de lampes à kérosène. Dans un des rapports adressés à son bailleur, les villageois destinataires de l'expérimentation sont décrits comme « ultra-pauvres », « consommateurs de kérosène cher, dangereux pour la santé et pour l'environnement, vivant avec moins de $1,25 par jour » ou encore comme « consommateurs ruraux de kérosène ». Le Research Group 5 et Kianga Energy Ltd. s'efforcent d'alerter leurs interlocuteurs quant au danger représenté par le kérosène pour les gens qui l'utilisent comme pour l'environnement, et de convaincre de tout le potentiel de changement contenu dans les lampes solaires. Il faut comprendre l'argumentaire commercial de Kianga et la motivation du Research Group 5 comme suit. Vendre des lampes solaires à des citadins aisés qui s'en serviront lors des coupures de courant (ce que font certaines entreprises concurrentes distribuant des lampes solaires haut de gamme) leur apporte un surcroît de confort ; vendre des lampes aux ultra-pauvres, consommateurs de kérosène, contient un projet de transformation du monde.

Enfin, les petits objets techniques comme les lampes solaires de Kianga Energy Ltd. produisent une géographie bien particulière. Ils constituent souvent une alternative à l'installation d'infrastructures en réseau, telle qu'on les connaît dans les pays riches. A la place du réseau électrique, on distribue des lampes solaires, à la place du réseau d'eau potable, on distribue de

petits dispositifs pour chloriner l'eau des puits, ou encore des petites pailles individuelles qui contiennent un filtre (Redfield, 2016). A la place du réseau d'égout, on distribue des toilettes portatives ou des sacs en plastique spécialement conçus pour les excréments humains (Redfield et Robins, 2016), etc. Ces petits dispositifs contribuent à la construction de « zones technologiques » (Barry, 2006). On peut lire dans ces dispositifs l'idée que le réseau ne sera pas étendu, ou en tout cas qu'il ne ressemblera pas au réseau dont profitent les habitants plus riches et vivant dans des zones mieux desservies.

General introduction

This dissertation discusses a contemporary form of intervention aimed at providing basic services, material resources and other forms of assistance to the poorest inhabitants of the world, while producing experimental evidence about how to reduce "global poverty". Over the past twenty years, this approach has grown tremendously influential among the protagonists of international development. In the early 2000s, when academic debates about aid efficiency seemed to have reached a dead-end[2], some development microeconomists[3] suggested to substitute what they regarded as too big and too abstract a question (does development aid actually reduce poverty?) with smaller, practical problems that can be answered by setting up *in vivo* social experiments. Is it more efficient to give out or to sell (and if so, at which price?) bed nets to reduce malaria? Is it more efficient to distribute free uniforms, to build schools or to treat pupils against parasitic infections to increase school attendance? Does monitoring teachers' attendance and docking their wage for each workday they miss decrease absenteeism? Do financial literacy training programs increase the impact of micro-finance? Such experiments have multiplied and now cover many different topics (agriculture, education, health, microfinance, etc.). What does it mean and what does it entail to experiment on people to address global poverty? How do these experiments work *in situ*? How are remote villages turned into places where an experiment can successfully take place? Which transformations do these experiments suggest, and to whom? The dissertation questions this experimental approach to poverty and inquires into the effects of the labification of places inhabited by the poor. What kind of knowledge can be produced through such experiments? What kind of poverty-reduction policy-making is made possible on the basis of such knowledge? How is global poverty constructed and problematized through such experiments?

[2] At that time, economists were mostly interested in the correlation between aid volumes and the Gross Domestic Product (GDP) of developing countries. A controversy was opposing scholars arguing that aid would have a positive effect if donor countries increased the aid volume (Sachs, 2006), to scholars arguing that aid is inefficient at best (Easterly, 2007), or even toxic (Moyo, 2010) for the economic development of poor countries. Susan Engel provides a critical overview of the 2000s aid debate (Engel, 2014).

[3] Most of them coming from top-ranking universities located on the East Coast of the USA (The MIT, Yale, Harvard).

Experimental, light-weight, market-based poverty-reduction interventions

Randomized controlled trials: the advent of evidence-based policy in poverty-reduction policy-making

The three economists who pioneered this field of research (Esther Duflo, Abhijit Banerjee and Michael Kremer[4]) received the 2019 Nobel memorial prize in economics for their experimental approach to poverty alleviation. They applied the method of randomized controlled trials (RCTs), already used in various fields (medical and pharmaceutical research, agronomy, social policy evaluation[5]) to global poverty problems. RCTs consist in evaluating the impact of interventions supposed to improve the lives of their recipients, by comparing a randomly selected group of people receiving a "treatment" (e.g. solar lanterns in off-grid areas, incentives to use chlorine to purify water, micro-loans) with a "control" group receiving a lesser treatment, or no treatment at all. This sophisticated but controversial evaluation method claims the legacy of clinical trials: RCT proponents display the ambition of testing the impact of poverty-reduction programs as rigorously as medical treatments are tested in clinical trials. They also hope that RCTs applied to poverty-alleviation can have the same influence in international development as clinical trials had in modern medicine:

> "It's not the Middle Ages anymore, it's the 21st century. And in the 20th century, randomized controlled trials have revolutionized medicine by allowing us to distinguish between drugs that work and drugs that don't work. And you can do the same, randomized controlled trial for social policy. You can put social innovation through the same rigorous, scientific tests that we use for drugs. And in this way, you can take the guesswork out of policy-making by knowing what works, what doesn't work and why." (Duflo, 2010)

The random selection of the treatment and control groups is both a distinctive feature of RCTs – what makes their "gold standard quality", according to their proponents (Angrist and Pischke, 2010), and one of its most controversial elements, denounced as unfair or unethical by its

[4] Esther Duflo and Abhijit Banerjee are professors at the MIT, and Michael Kremer is a professor at Harvard University. Duflo comes from France, and Banerjee from India. They form a married couple and have strong ties with India, where they have run numerous experiments and formed working relationships with the governments of many Indian states. Kremer ran an experiment in the late 1990s to test whether mass deworming of children could increase school attendance in Kenya (Miguel and Kremer, 2004). This experiment became famous. It contributed to popularize mass deworming campaigns among governments and donors while serving as an example of the potential influence of randomized controlled trials in international development.

[5] In the USA, randomized social experiments started early in the 20th c. (Jamison, 2016).

opponents (Abramowicz and Szafarz, 2019 ; MacKay, 2018). The random assignment of individuals (or schools, or villages[6]) to treatment or control is supposed to ensure that both groups are statistically similar and share the same average characteristics. In this way, according to RCT-proponents, the difference between the average well-being of the two groups cannot be explained by some initial difference between the groups. Moreover, both groups are supposed to experience the same shocks (e.g. good or bad weather, especially in farming areas, or a change in the government's social policy) and to be affected in a similar way by these shocks. As a result, according to the economists promoting RCTs, any difference between the evolution of the average well-being of the two groups can be unambiguously attributed to the treatment, at the exclusion of any other factor.

This strong emphasis on the correct attribution of causality is one of the main arguments of RCT-proponents. They claim that RCTs help channeling funds towards effective solutions to poverty problems, promoting evidence-based policy and fostering a sound and rational management of aid money. This methodology, based on extensive data collection and quantitative analysis, is credited by its proponents with isolating the pure (statistically unbiased) impact of the tested interventions, and thus producing "hard evidence."[7] Arguing that poverty-reduction policy-making has only been guided by partisan ideology or by "the fad of the moment" (Banerjee and Duflo, 2011, p. 408), RCT proponents advocate for evidence-based policy. Their agenda is to create a repository of poverty-reduction solutions found effective, so as to reconfigure the anti-poverty policy landscape around an array of "best practices." They work at turning the results of their experiments into advice to donors and philanthropists and policy recommendations for decision-makers, so as to channel funds towards the programs deemed the most efficient. The purpose of achieving improvements *locally* ("in the field") and the ambition of producing evidence about "what works" to reduce *global* poverty are completely entangled.

Little development devices

Randomized controlled experiments are, by design, particularly fit to test small interventions (de Souza Leão and Eyal, 2019), such as the "little development devices" and "humanitarian

[6] A program may be randomized across individuals, or across groups, depending on the experiments.

[7] This phrase, as well as other terms placed between quotes, are recurrent in the parlance of RCT-proponents.

goods" defined by anthropologists researching development, humanitarian action and the politics of infrastructure. These little devices are

> "objects or instruments designed to care about and improve the welfare of infrastructurally marginal populations (i.e. those lacking connection to 'networked' forms of modern provisioning—such as water, sewerage, communication, electricity—or to services such as health care and finance)." (Collier et al., 2017)

The size and shape of such devices define a particular political space and scope of action:

> "The (purported) rigors of experimentalism are combined with an aesthetics of parsimony and small scale: elegantly designed, functional objects replace the monument and spectacle of dams, power plants, or railroads." (Collier et al., 2017)

These devices may be technology intensive (e.g. relying on solar energy, mobile communications). The proliferation of such little devices goes hand in hand with the multiplication of a variety of smaller (e.g. NGOs, social businesses) and non-state (private foundations, international organizations) actors.

Which economic models to serve the poor?

Finally, there is the issue of the marketization of the "little development devices." Should they be distributed for free or sold, and if so, at which price? Market design and price-testing have belonged to the scope of problems investigated through RCTs by development economists since the beginning. To run an RCT, indeed, economists need an implementing partner (e.g. an NGO, a social business, sometimes a public administration) rolling out a poverty-alleviation intervention. When this partner operates as a for-profit, and sells the good or service at hand, the issue of pricing necessarily arises; it is all the more acute when the targeted customers are extremely poor (Cholez and Trompette, 2013). Non-profits and administrations may also want to charge a fee, either for partial cost-recovery, or for other reasons, such as screening out the less committed users. In any case, the question of the economic models underlying the distribution of the "little development devices" is a full-fledged part of the problem, such as it is addressed by RCT proponents.

My research object stands at the intersection of those three circles: (1) the experimental approach to poverty, in the form of RCTs; (2) the proliferation of minimalist devices to remedy the ailments caused by extreme poverty, and (3) the question of the market-based provision of such devices to the populations who need them. None of these three tendencies is radically new but all have grown influential since the early 2000s.

The emergence of a new international development paradigm in the 2000s?

The experimental approach to poverty, the proliferation of little devices and the advent of market-based interventions are distinct but closely entwined trends that together define a particular configuration within which poverty-action takes new forms. While the use of experiments for development purposes is by no means new and already existed in colonial contexts (Bonneuil, 2000 ; Lachenal, 2017 ; Tilley, 2011), its contemporary forms are regarded as being part of a recent disruption in international development policy-making practices. Long-term partnerships geared at modernizing large infrastructures and fostering nation-building have given way to smaller-size interventions. Often shaped as time-limited projects, they address smaller, narrower objectives that are easier to define, to quantify and to assess[8].

RCTs applied to poverty-reduction policy-making have proliferated so fast in the academic field of development economics, in international development institutions and in the media, that several contributions were published to question this success (Donovan, 2018 ; Jatteau, 2018 ; de Souza Leão and Eyal, 2019). The Abdul Latif Jameel Poverty Action Lab[9] (J-PAL), a research center dedicated to supporting the use of RCTs, was created in the MIT in 2003. Around the same time, an NGO named Innovations for Poverty Action (IPA) was created at Yale University, with the same purpose. Both organizations have worked extremely closely with each other since the beginning. The J-PAL has run over a thousand RCTs and IPA more than 530 (as of 2020). Both the J-PAL and IPA have opened regional and country offices around the world. Together, they form a global leadership (Jatteau, 2016). Thousands of researchers worldwide have collaborated with one or the other organization. The J-PAL and IPA have promoted RCTs through online courses and corporate trainings, through advocacy in favor of evidence-based policy and clever communication targeted at a general audience[10]. In 2005, the World Bank created the Development Impact Evaluation (DIME) initiative, which has increased the share of RCTs in the World Bank's evaluation portfolio.

Also in the early 2000s, a businessman and corporate strategy scholar, C.K. Prahalad, published *The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits*, a book inviting

[8] These qualities are also those of a "good project" in the field of humanitarian interventions (Krause, 2014).

[9] It was named in honor of the father of the donator who seed-funded the center in 2003 with large endowments. The donator, an alumnus of the MIT, runs a multinational company based in Saudi Arabia.

[10] In the dissertation, I oftentimes refer to material published by the J-PAL or to IPA, in quality of global leaders of RCTs applied to poverty issues.

multinational corporations to tap into the huge market formed by the poorest inhabitants of the planet (Prahalad, 2009). Prahalad calls for business innovations enabling companies to make profits while efficiently catering for the unmet needs of hundreds of millions of people. The idea that the poor must be regarded as consumers whose needs are not properly addressed is also behind the development of micro-finance, which provides the poor with the banking services they presumably lack. The Grameen Bank was created in the 1980s in Bangladesh, but experienced a phase of growth and developed internationally in the early 2000s. Its founder, Muhammad Yunus, was awarded the Nobel Peace Prize in 2006, at the peak of the popularity of microfinance. The bottom of the pyramid (BoP) approach and microfinance are two distinct initiatives, but they both stem from the idea that the poor must be helped to participate in markets, as consumers or producers. This idea is described as "one of the most fundamental shifts in the approach to poverty alleviation since the 1960s." (Cooney and Williams Shanks, 2010)

The second half of the 2000s was also a golden age for the use of light-weight development technologies, such as mobile money networks enabling micro-payments and micro-savings (Maurer, 2012) or low-cost solar lights (Cholez and Trompette, 2019 ; Cross, 2013). They embody a form of reaction against the modernist projects of developmentalist states during the post-World War II and post-independence period:

> "In reacting to and against the perceived failures of the past, little development devices are designed to produce immediate, measurable and testable outcomes, and to rely on individuals or communities as both agents of development and arbiters of value." (Collier et al., 2017)

How to discuss the use of RCTs in poverty action?

The literature offers two possible entry points to grasp the use of RCTs in poverty action. The first one is the controversy about RCT as an impact evaluation methodology which is overrated with regards to its scientific achievements and politically questionable. The alleged superiority of RCTs over other impact evaluation methods, conveyed through "an intense whirl of communication and advocacy, backed by a plethora of press and para-academic media" (Bédécarrats et al., 2019, p. 752) has aggravated skeptical scholars. There is now a relatively large corpus of scholarly articles criticizing the use of RCTs in development economics. In their writings, economists unconvinced by RCTs and social scientists involved in development

issues seem overall perplexed as to why RCTs have been so academically successful and attractive to donors, in spite of their many shortcomings (Bernard, Delarue and Naudet, 2012 ; Jatteau, 2018 ; de Souza Leão and Eyal, 2019). One way of addressing RCTs is thus to try to solve this puzzle and account for the success of RCTs while exposing the epistemological, methodological, ethical or political issues that contradict the "gold-standard" narrative.

Another possible entry point consists in analyzing RCTs as yet another type of development projects that are doomed to fail, after state-led modernization enterprises and projects led by international organizations. In *Seeing like a State*, political scientist James C. Scott wonders

> "why so many well-intended schemes to improve the human condition have gone so tragically awry" and tries "to provide a convincing account of the logic behind the failure of some of the great utopian social engineering schemes of the twentieth century" (Scott, 1998, p. 4)

Accounts of development failures also include anthropologist James Ferguson's *The Anti-Politics Machine*. This book describes a rural development project conducted by the World Bank, the FAO and the Canadian public development agency (CIDA) in Lesotho. Ferguson writes:

> "For the 'development industry' in Lesotho, 'failure' appears to be the norm. […] 'Rural development' projects are to be found scattered liberally across the African continent and beyond […]. What is more, these projects seem to 'fail' with almost the same astonishing regularity that they do in Lesotho." (1994, pp. 8–9)

Are RCTs the new face of failing development projects? Is it the same old story with new protagonists, new institutional configurations and new analytical tools? Although my research is inspired by the scholarship criticizing development projects and highlighting their side-effects, I wish to emancipate my account of RCTs from the notions of success or failure. My criticism of RCTs shall not take the form of an assessment. I do not aim at assessing RCTs, neither as to whether they are fulfilling their promises, nor as to whether they have been achieving or hampering human development.

In the next pages, I briefly present those two corpuses, before presenting my own contribution to the scholarship on RCTs.

RCT: a controversial impact evaluation methodology

The use of RCTs by development economists has provoked sustained controversies among scholars. I briefly summarize the existing scholarly debates about RCTs – some of the points introduced in the next couple of pages are discussed in further details in the chapters of the

dissertation. There are three main lines of criticism in the literature: RCTs are questioned with regards to (1) the quality of the knowledge they produce, (2) their political relevance and (3) the ethical issues they pose. The present dissertation mostly contributes to the first two areas of discussion.

RCTs are not as rigorous as their proponents claim

RCTs are heralded as a "gold standard" impact evaluation methodology by their proponents, who claim that RCTs sit at the top of the "hierarchy of evidence" and tend to disregard findings obtained by "non-experimental" methods (Bédécarrats, Guérin and Roubaud, 2019, p. 755). Economists using RCTs rarely engage in mixed-method research projects and when they do, the collaboration is difficult (Kabeer, 2019; Quentin & Guérin, 2013). In reaction to the epistemological self-confidence of the randomistas[11], scholars have questioned the scientific rigor of RCTs. The methodology may seem to enable clean causal identification on paper, but their implementation is error-prone, and their underlying assumptions rarely hold in practice (Deaton, 2009). Moreover, experimenters may be forced into tweaking the experimental protocol, either to accommodate the demands of their operational partners or to adapt to unexpected situations in the field (Bédécarrats et al., 2019 ; Quentin and Guérin, 2013). However, the potential gap between a research protocol and its actual implementation is a generic concern, which can apply to many research designs. More specific to RCTs is the hiatus between the randomistas' ambitions to systematize their use to evaluate anti-poverty interventions and their limited scope of application (Bédécarrats, Guérin and Roubaud, 2015 ; Bernard, Delarue and Naudet, 2012).

The usefulness of experimental findings is also questioned: authors have deplored the fact that RCTs do not elicit the causal mechanisms through which a given intervention may produce an impact (Deaton, 2009 ; Kvangraven, 2020 ; Labrousse, 2010 ; Ravallion, 2019). Thus, RCTs may estimate the average impact of anti-poverty interventions, but they cannot explain why an intervention work or not. Finally, an often-expressed concern is that the results of a given experiment may not extend beyond the field site where the intervention was tested (Cartwright, 2010 ; Rodrik, 2008). As a result of these various shortcomings, many authors insist that RCTs must be associated with other methods (in particular, qualitative methods) in order to produce

[11] This term designates the development economists who have been promoting the use of RCTs in poverty-alleviation policy-making, for impact evaluation purposes. RCT proponents received this nick-name from Angus Deaton, an economist (and Nobel memorial prize recipient) who is one of the most vocal critics the use of RCTs in development economics.

valuable knowledge (Bédécarrats, Guérin and Roubaud, 2019 ; de Haan, Dowie and Mariara, 2020 ; Kabeer, 2019 ; Naritomi et al., 2020 ; Ravallion, 2019).

RCTs are politically questionable

RCT-proponents have often presented RCTs as an antidote to the guesswork, fads or ideology which, according to them, usually guide poverty-reduction policy-making (Banerjee and Duflo, 2011). They claim to participate in the evidence-based policy movement and to provide objective guidance to policy-makers. Scholars have challenged this alleged axiological neutrality. They have argued that RCTs are consubstantial tools to the advent of a "neoliberal governmentality" in international development, characterized by a greater emphasis on individual behaviors and the proliferation of market-based responses to social issues (Akbulut, Adaman and Madra, 2015 ; Bardet and Cussó, 2012). Other scholars regard the randomistas' technocratic ambition to de-politicize and rationalize poverty action as a problem in itself, for poverty should precisely be the object of political debates (Parkhurst, 2017 ; Webber, 2015). Authors warn that RCTs distort the global poverty research agenda, by giving more visibility and more importance to the interventions that can be tested through a randomized experiment to the detriment of interventions which cannot – typically, the provision of large infrastructures, or macroeconomic policies (Barrett and Carter, 2010). Not only do RCTs favor some policies and marginalize others, but they also contribute to distribute agency in a specific way. On the one hand, RCTs engage with the poor as naïve subjects of experiments rather than empowered and organized citizens (Webber, 2015). On the other hand, the influence of foreign donors is enhanced (Best, 2017 ; Leão, 2020). Some authors see in the important influence of foreign aid agencies and donors the sign of a concerning continuity with colonial practices (Hoffmann, 2020 ; Reddy, 2012). These criticisms share a common point: RCTs are seen as bearing potentially harmful or questionable political consequences.

RCTs are unethical

Finally, a last line of criticism has to do with the ethical issues posed by RCTs. The randomization of the intervention – the very core of the methodology – is often described as a problem, because it creates an unequal situation amongst participants: some receive inputs and some do not (Baele, 2013). This is all the more problematic as economists tend to completely disregard the principle of equipoise, which is often an ethical requirement in clinical trials (Abramowicz and Szafarz, 2019 ; Ravallion, 2019). Equipoise refers to the fact that the experimenters should run an RCT only when the medical community genuinely ignores

whether the patients assigned to the treatment group will fare better than the ones assigned to the control group. If it is regarded as certain that the treatment group will benefit, then the experiment is considered unethical. In another version, equipoise consists in comparing the treatment under evaluation to the best available standard treatment rather than to a placebo[12]. Economists justify the disadvantage of the control group by the fact that resources are limited anyway: it is not possible to "treat" the whole target population, and they are just taking advantage of the conditions of scarcity to implement a randomized design. But to which extent are the participants informed about the randomized allocation of the treatment?

In many cases, investigators fail to secure the participants' informed consent (Barrett and Carter, 2010 ; Hoffmann, 2020). This is all the more problematic when investigators conduct experiments abroad, in countries where they benefit from a highly asymmetrical relation with the research subjects and from a looser enforcement of ethical rules (Hoffmann, 2020). Anthropologist Adriana Petryna describes a similar phenomenon in the globalization of pharmaceutical trials: US-based companies run trials in Eastern Europe, where they are less constrained by regulations (2008). Informed consent is sometimes seen as less crucial in poverty-reduction experiments than in clinical trials, because the latter are presumably more benign and less risky for the participants. But several poverty-reduction RCTs have proven harmful (Hoffmann, 2018). Here is one example. The "No Lean Season" experiment was conducted in rural Bangladesh, where subsistence farmers often find themselves at risk of seasonal famine. The treatment under evaluation consisted in giving or lending a sum corresponding to a free round-trip bus fare to families, so as to encourage them to send one person to the capital city (Bryan, Chowdhury and Mobarak, 2014). The migrants, according to the experimenters, could easily find a menial job in the city and send remittances back home to help the household survive the lean season. The program involved risks for the migrants during their stay in the city: they received no further support in their urban migration than help with the bus fare. A participant interviewed by a US media explained that he "stayed in a room with fifteen other men in a trash-strewn neighborhood" in a "filthy, smelly" place[13]. In 2019 several

[12] The principle of equipoise is debated even in the context of clinical RCTs though (Baele, 2013 ; MacKay, 2018). Some researchers argue that medical experiments include a therapeutic obligation towards the research subjects, whereas others think that medical research and medical care are two separate fields of activities and must be regulated by different ethical requirements. Moreover, there are ambiguities and disagreements about what it means that the medical community is genuinely uncertain about the efficiency of a treatment, and about how to define the best available standard treatment.

[13] Source: https://www.npr.org/sections/goatsandsoda/2017/12/28/572911406/want-to-help-someone-in-a-poor-village-give-them-a-bus-ticket-out?t=1599401008896

people were killed in an accident, in relation to their precarious living conditions in the city, while participating in the experiment[14]. Was the experiment worth the risk? Whose decision should it be? And what to conclude from this series of problems? Scholars discussing the ethics of RCTs highlight the lack of interest of the randomistas for such topics and the thinness of their reflection about ethics (Baele, 2013 ; Barrett and Carter, 2010 ; Hoffmann, 2020 ; Ravallion, 2019).

Development projects as epistemic and political failures

The conclusion of James C. Scott's *Seeing like a State: how certain schemes to improve the human condition have failed* is entirely dedicated to expanding on the following statement:

> "the progenitors of such plans [high modernist development schemes] regarded themselves as far smarter and farseeing than they really were and, at the same time, regarded their subjects as far more stupid and incompetent than *they* really were." (1998, p. 343, original emphasis but precision between brackets is mine).

According to Scott, demiurgic ambitions, even animated by the noblest sentiments, are not only doomed to fail but also to bear harmful consequences. Top-down schemes intended to thoroughly and durably modify the economic, social or ecologic organization of life are not resilient when faced with the contingencies and surprises which necessarily arise along the way. These schemes are based on "simplifying fictions" (1998, p. 347), and populated with standardized, abstract citizens. Planners, in their attempt at making society legible, fail to understand how it works and end up destroying its very fabric.

Whereas Scott presents an array of projects taking place in various countries and various historical settings, development anthropologist James Ferguson focuses on one rural development project and methodically explains its consequences in *The Anti-Politics Machine: "Development," Depoliticization, and Bureaucratic Power in Lesotho* (1994). Coining the phrase "anti-politics machine", Ferguson refers to the failure of development project managers to consider the recipient governments as political entities, composed of rival factions and parties that may act strategically, and not necessarily work towards the interests of the people.

[14] " [I]n January 2019, one of the known risks of the program came to bear in a tragic manner: an overloaded truck fell onto a temporary shelter in which several seasonal migrants who had migrated to work at a brick kiln were sleeping, killing 13 individuals, five of whom were affiliated with households that participated in No Lean Season. Moreover, four of the five were underage males aged 15-17. We were deeply saddened by this incident and the implications for these five No Lean Season households." Source: https://www.evidenceaction.org/were-shutting-down-no-lean-season-our-seasonal-migration-program-heres-why/

Recipient governments are mistakenly treated as apolitical bureaucracies, acting as mere transmission belts of development projects.

Another version of the anti-politics machine argument in the book is closer to this dissertation's project: development can act as an anti-*geo*politics machine. Ferguson shows that Lesotho's poor economic situation is framed in World Bank reports as resulting exclusively from Lesotho's geography and domestic economy. However, Ferguson claims, Lesotho's economic situation very much depends on South-Africa's industry. Indeed, a large proportion of the Basotho men described as "farmers" in the World Bank reports are in fact earning a wage in neighboring South-Africa, where they work as diggers in mines. The cattle their wives keep at home is used as an asset and retirement plan, and not as an income-generating activity. By portraying Lesotho as a self-contained, pastoral economy and ignoring the influence of South African mining industry on Lesotho's economic situation, the World Bank and the other project partners are set for failure. On the other hand, acknowledging the impact of South African politics on Lesotho would gut the development project: the development consortium does not have a mandate to intervene outside of the aid-recipient country's borders. Ferguson made another analytic gesture, inspired by French philosopher Michel Foucault's work: beyond the analysis of the project as a failure[15] to achieve economic development and reduce poverty, he describes the "instrument effects" of the project (1994, p. 255). The project, indeed, produces an array of unintended effects which are intelligible of their own. Through these unintended effects, the project becomes an instrument of power. Formulated by developments experts as a purely technical intervention, it reinforced the bureaucratic presence of the state in the Thaba-Tseka region of Lesotho, and reallocated resources in a way that favored some groups over others. While ideologically de-politicizing both the concepts of poverty and the state, the project ended-up producing very political effects.

Like Ferguson, I am interested in the effects that development interventions (here, in the form of RCTs) actually achieve. However, Ferguson emphasizes the intellectual operations and

[15] Another interesting take on failure is anthropologist David Mosse's claim that development interventions are not assessed with regards to their impacts on the recipients, but with regards to their adequacy with the development policy agenda (2005). The success or failure of an intervention is not the result of impact evaluation, but of interpretive work. As a consequence, development practitioners put their efforts in maintaining discursive adherence between the interventions and the policy that presides over them. Moreover, Mosse argues, development policies are not formulated to guide development interventions and practices, but to ensure political support from various actors (e.g. donors, public development agencies from donor countries) and maintain their legitimacy. In these conditions, the fact that interventions are deemed a success or a failure does not say anything about whether they have produced any improvement on their recipients. It would be interesting to know how Mosse would have analyzed RCTs, given that RCTs are presented by their proponents as the very antidote to the interpretive dynamics he describes.

discursive practices (typically, the production of reports) occurring as part of the development project, arguing that they produce "very real social consequences" (1994, p. xv). In this dissertation, I focus on the concrete, material operations that form the day-to-day of the project.

RCTs produce a micropolitics of poverty

This dissertation studies RCTs as knowledge production devices and political objects – both dimensions being closely entangled. I hope to bring a fresh contribution on RCTs, taking advantage of the unrestricted access to the field site I obtained during my doctoral research. I focus on RCTs as a social experiment that is being implemented somewhere through a series of concrete, material operations, rather than as a methodology or a corpus of discourses. How does such an experiment work in the field? What are the effects of such a form of intervention? Which entities are questioned and troubled by the experiment? What transformations does the experiment propose and to whom, purposely or in the form of the "instrument-effects" described in Ferguson's *Anti-politics Machine*?

My contention is that RCTs produce a micropolitics of poverty. Micropolitics describes the construction of a discrete series of field sites within which poverty is investigated, remedied and contained. I argue that RCTs proceed through fragmentation of the world, disentanglement of the causes and containment of poverty action. The prefix micro refers neither to the size nor to the scale of the poverty-reduction policies at hand. Micropolitics describes the strange pendulum movement between small, circumscribed, localized field sites and "global poverty." Consortia of large and powerful organizations converge towards small, remote places to address global poverty. Micropolitics of poverty describes how a global issue is problematized as something that can be localized, addressed and contained within the limits of the spaces inhabited by the poor. Finally, micropolitics of poverty also describes the mobilization of important means (financial, logistical, scientific) to experiment and eventually promote small, lightweight, inexpensive solutions to poverty.

The experimental approach to poverty tends to equate poverty knowledge with knowledge about the poor, and consequently, to equate anti-poverty policy with policies targeted at the poor. It is thus where the poor live that *in vivo* social experiments are conducted. The fragmentation operated by RCTs is both geographical (the field sites are small, circumscribed areas) and demographic: experiments are conducted almost exclusively on the poor. These

experimental field sites also form a causal space, inside of which the experimenters strive to establish and quantify the causal impact of a poverty-reduction intervention on poverty-reduction. This effort consists, strictly speaking, in attributing some effects (e.g. an increase in the average income of the treatment group) to a particular cause (the treatment). More precisely, the attribution of causality is sought through the careful disentanglement of the impact of the evaluated treatment from the impact of all the other factors that may influence the outcomes of interest. However, by testing certain types of remedies (e.g. incentives for parents to provide medical care and schooling to their children) which are fit to be evaluated through a randomized evaluation, RCTs contribute to shine the light on certain types of issues related to poverty (e.g. parents' failure to provide health care and education to their children). Thus, even if RCTs are narrowly geared at causality attribution rather than causality identification, they end up highlighting certain issues that in turn become regarded as causes of global poverty more generally. The issues emphasized by the experimental approach to poverty share a common point: they tend to concern individual behaviors and decision-making patterns (Berndt, 2015 ; Berndt and Boeckler, 2016). Thus, the poor are turned into the main locus of poverty action. The dissertation does not exclusively focus on the Foucauldian argument that such interventions produce a form of governmentality based on the transformation of individuals (Labrousse, 2010). It also aims at reflecting on the space that is produced by RCTs.

I contend that the experimental approach to poverty has the effect of undermining relationalities between spaces inhabited by the poor and their outside. Restraining the space of causes in a limited geographic perimeter and a-historic temporality evacuates the possible role of exterior entities (e.g. other countries, multilateral organizations, multinational corporations) in producing poverty. This argument is inspired from *The Anti-Politics Machine*: development experts may obscure the economic and political relations between nation-states, so as to present national economies as self-contained entities, for which the type of solutions offered by multilateral development agencies are relevant (Ferguson, 1994). In this dissertation, I argue that contemporary poverty-reduction interventions achieve a similar result. However, they do not confine the phenomenon of poverty (and its causes) to the national economy, but to another type of space, global, discontinuous and "patchy" (Tsing, 2015). I argue that RCTs produce a patchy global space, that achieves two distinct and complementary functions. On the one hand, it defines a zone within which poverty can be problematized and remedied according to a similar protocol. On the other hand, that patchy global space contains the issue of poverty within its limits, protecting the rest of the world from the imperative of transformation that prevails

inside of it. This disconnection effect is also at play when it comes to imagining and designing desirable futures. The promises of contemporary anti-poverty interventions are limited and humble. The perspectives of change proposed to the poor are not only centered on their own transformation (change in their decision-making pattern, behavior, and day-to-day life habits) but also completely disconnected with the idea of the good life in richer places.

Research questions

In my attempt at showing that RCTs produce a micropolitics of poverty, I address several entangled research questions. How do RCTs work, how is it made possible on the field site, in spite of all the implementation difficulties? What kind of poverty knowledge do RCTs produce? How, by eliciting which kinds of causality, do RCTs explain poverty? How do RCTs contribute to promoting market-based approaches to poverty? What does it mean to use experiments to address poverty; are RCTs a way of doing politics? How do RCTs problematize poverty as a global object?

RCTs as a series of practical, material operations

First, there is a set of very empirical questions: how do RCTs work in practice? Literature is rather scarce when it comes to the practical implementation of RCTs in the field. Socio-economist Arthur Jatteau, in his PhD dissertation about RCTs as evidence-production devices, uses interviews with research assistants or interns who have spent time doing fieldwork (Jatteau, 2016). These interviews provide some insight on what an RCT looks like from its field site, and in particular on the difficulties they experience. Economists Aurélie Quentin and Isabelle Guérin provide a case study in which they discuss the disagreements and negotiations between the experimenters and their operation partner during an RCT (Quentin and Guérin, 2013). They discuss the conflicting orientations of the economists, whose questions are driven by the literature in economics, and of the operational partner, whose questions are driven by their experience of the field. The authors argue that RCTs fail to address the real issues arising in the villages where the experiment took place. Bédécarrats and colleagues provide a “behind the scene” description of an RCT on microcredit conducted by the J-PAL in Morocco (Bédécarrats et al., 2019). They deplore “tweaks” in the research protocol and the low quality of data collection.

The above-cited authors' point is to show that RCTs are not as rigorous as it is claimed by their proponents, and to nuance the interest of the evidence it produces. Such contributions are valuable because they challenge the claim that RCTs are the most rigorous and credible impact evaluation methodology available nowadays. This dissertation only marginally contributes to the controversy about the alleged "gold standard" status of RCT. Rather, I acknowledge the criticisms made by these scholars and subscribe to their findings. Departing from the statement that RCTs are not the gold standard evidence-production machines touted by their proponents, I investigate other aspects of RCTs, with a particular interest in their implementation. What are the conditions of possibility of running RCTs? How to convince people to take part in them? What happens on the site of an RCT?

The material, practical conduct of RCTs is an important component of my object of research. How does an experiment travel from the places where it is designed and planned (in general, in developed countries[16]) to a field site located in a poor area of a developing country? Which practical problems arise in the process and how are they solved? This empirical, mundane curiosity stems from my experience as a master's student in a program of economics specialized in development economics and impact evaluation, between 2010 and 2012. The popularity of RCTs was peaking: it was taught as the gold standard methodology for impact evaluation and as cutting-edge science. In the summer of 2011, as part of this master's program in economics, I interned with an international, US-based research center that I pseudonymize as Evidence against Poverty (EvaP), in the small East African country where I ended up conducting my doctoral research. During this internship, I had the opportunity to observe the site of an RCT for two weeks, along with two research associates in charge of implementing it. They spent much time printing paper questionnaires, buying staples, recruiting and training staff and walking up and down the hills to check on the quality of the interviews performed by the enumerators. Logistics and team management took up an important part of their worktime, together with data cleaning and improving data quality. I admired their meticulousness, their efficiency and their commitment to produce high quality data. At the same time, I was bemused by their complete lack of interest in the intervention they were evaluating: they did not know the details of it, and were not curious about it. Their day-to-day routine seemed to be an endless series of practical problems to solve one after the other. The experiment seemed also demanding for the enumerators, and burdensome for the villagers who participated in the experiment.

[16] Social scientist Nimi Hoffmann shows that most of the researchers leading an RCT are affiliated with a university in the US or Western Europe (Hoffmann, 2020).

Finally, I realized that some features of the experiment (e.g. new measurement approaches, the way the treatment was rolled out) were implemented in order to allow for some innovations in the statistical identification of causality. These innovations would help the principal investigators of the project to publish scientific articles in economics journals, but – I bitterly thought – they were not of any practical interest for the participants. In which conditions, at the cost of which, efforts is evidence produced? How are the villagers recruited in the experiments?

The dissertation provides detailed answers to these questions. My perspective is loosely inspired from historian Guillaume Lachenal's "pragmatic approach" of a public health experiment conducted in Cameroon by the French colonial power (2010). The author warns against two types of narratives which are common when it comes to recounting a colonial experiment. One of these narratives consists in producing a naïve paraphrase of the archives, and thus granting excessive self-fulfilling efficacy to the biopolitical claims displayed by the colonial authorities[17]. The other narrative (equally unsatisfying) consists, on the contrary, in enumerating the many ways in which the experiment failed to achieve its original utopian ambitions, by going over the difficulties encountered by the experimenters in the field. One reason to refrain from building such a "failure analysis" is efficiently summarized by a "so what?" – isn't it the common lot of utopias to stumble against unexpected difficulties? The second reason is that this type of failure often bears a share of positivity: there definitely is some hope in (white, rich-country citizens) experimenters failing to achieve experimental control over (black, poor, colonized) subjects. The author insists on the importance of grasping the "materiality and performativity" of the experimental situation, even though the colonial "laboratory" might have been a metaphor more than anything else. "What was it like to be in that place that was called a laboratory?" asks Lachenal. In a similar enterprise, I describe and discuss an experiment in progress, with no particular interest in checking what I observe in the field against what the experimenters announce or claim, or in assessing whether the RCT satisfyingly accomplishes its evidence-production purpose. I question the effects of RCTs *in situ*, but my perspective is orthogonal to the experimenter's one. By that, I mean that I completely emancipate my analysis from the experimenters' findings: I do not discuss these findings. I do not comment on the researchers' methodology either, and do not wish to offer any feedback or propositions to improve or amend RCTs. The dissertation describes the

[17] On a side note, it is also very interesting to keep this in mind while reading about RCTs as a governmentality technique. Whereas the literature discussing RCT with Foucauldian concepts is stimulating, it sometimes relies too heavily on analyses of the discourse of RCT proponents and on written descriptions of experiments.

implementation of one particular RCT project and asks: what does this RCT question, what does it challenge? Which political propositions does it make? Which affects does it create? Which transformations does it suggest?

RCTs: experimenting as a mode of governance of poverty problems?

This prosaic interrogation (how does an RCT actually happen and with which effects?) doubles with epistemic and political ones. I question the enmeshment between the research and the intervention components of RCTs. RCTs look like international aid (material resources or technical solutions are conveyed to the poor, with funding from rich countries) but the relationship between the various protagonists of an RCT is more complicated. RCTs remain a scientific enterprise: they are designed to meet the needs of the researchers. In his PhD dissertation, Arthur Jatteau addresses this ambiguity, but mostly from a sociology of organizations point of view, by providing an analysis of the J-PAL as pulled between the conflicting missions of the research center and the poverty-alleviation NGO (2016). Sociologist Margarita Rayzberg is also interested in the articulation between the intervention and the research component of RCTs (2018). She focuses on a particular moment happening in some RCTs, in which the random assignment of individuals to the treatment or control group takes place during a "public randomization ceremony" – that is, a lottery. She discusses how these ceremonies frame fairness, and obscure the inherently unfair situation of the RCT: some people will receive some material resources when their neighbors will not get anything from the experiment. More generally, she investigates how the articulation between research and intervention materializes on the field sites of RCTs.

The tensions can be seized through the prism of "experimentality." Anthropologist Adriana Petryna studies the global market for pharmaceutical clinical trials (2008). She analyzes experiments not only as drug-testing devices but also as social (and global) re-ordering devices. The American industry of pharmaceutical testing is rolling out trials abroad – in Central and Eastern Europe for instance – searching for naïve subjects and for places where it is cheaper and easier (due to more accommodating regulations) to run a drug-testing experiment. These experiments also have the effect of providing medical care to people who otherwise struggle to access it. As a result, fragmented, dispersed, private organizations, instead of central governments, provide medical care. Medical anthropologist Vinh-Kim Nguyen makes a similar observation about HIV-AIDS drug-testing in Africa: sometimes, participating in a clinical trial

is the only way for patients to get any medical care at all (2010). The line between experimenting and providing care becomes burred, to the point that the experiment itself becomes a social good. Inspired by anthropologist Richard Rottenburg (2009b), medical anthropologist Fouzieyha Towghi and feminist scholar Kalindi Vora ask if "Foucault's 'governmentality[18]' is being displaced by 'experimentality' as the dominant mode of social ordering" in the field of medical care (Towghi and Vora, 2014, p. 5). STS scholar Michelle Murphy comments on the multiplication of reproductive health experiments conducted by foreign NGOs in Bangladesh since the 1970s:

> "Experimentality hails life as composed of potential, of chances, of possibilities for becoming, of manipulable relations that can be triggered and altered, if only the right protocol and technique can be deployed. […] Instead of a centralized disciplinary rule, NGOized experimentality offers an ad hoc, continuously refreshing, transnationally attached, locally organized patchwork of unevenly distributing funds, technologies, practices, infrastructures, experts, services, collectivities, and workers from […] village to village." (Murphy, 2017, pp. 81–87)

These experiments, Murphy argues, are not only about reproductive health. They also contribute to produce new political assemblages, within which resources are distributed according to different modalities. Geographers Sophie Webber and Carolyn Prouse extend the use of the concept of experimentality to the case poverty-reduction RCTs, arguing that they lead to an experimental governance of development problems (2018).

Throughout the dissertation (and in particular in chapters 2 and 4), I discuss the idea that experiments, regardless of their objects or results, might constitute a kind of intervention in and of themselves. I contribute to the literature on experimentality by describing the detail of what happens during these interventions and by discussing their potential effects.

Which causal space do RCTs produce?

RCTs are geared at identifying causal relationships and more specifically at estimating the causal impact of an intervention on average poverty-reduction in the experimental sample. A network of French development economists affiliated with public development agencies[19] have

[18] Governmentality, in Foucault's work, refers to the fact that one modern attribute of power is to regulate people's conducts, so as to make sure they are healthy and productive (Foucault, 2004a).

[19] French development agencies include the AFD (French Development Agency) and the IRD (French Development Institute). The first one is a public development institution, tasked with implementing the official French development policy and granting concessional loans to developing countries. The second one is a large research institute on development, including natural and social sciences.

strongly advised against the systematic use of RCTs for impact evaluation purposes in development. One of their many arguments against RCTs is that it is useful only in cases when the causality channel between the program and the outcome is short and straight (Bédécarrats, Guérin and Roubaud, 2015 ; Bernard, Delarue and Naudet, 2012). Another common criticism formulated against RCTs by economists is that they lack external validity, meaning that there is no way of knowing whether the findings of one RCT generalize beyond its specific context (Cartwright, 2010 ; Deaton, 2009 ; Ravallion, 2019).

The question of causality, such as it is produced by RCTs, is also at the heart of this dissertation, but not with the internalist point of view of the economists taking part in the scientific controversy about RCTs. Drawing on STS, I inquire into the way RCTs construct the causal space of poverty (especially in chapters 1 and 3). What kind of poverty knowledge is produced through RCTs? Which types of causality do they emphasize, and which type of causality are they unable to exhibit? With which consequences in terms of policy-making? As RCTs strongly rely on methodological individualism and focus on individual- and household-level dynamics, I also ask: which figure of the global poor emerges as the result of the use of RCTs to investigate poverty? My inquiry about causality and the type of poverty-knowledge produced by RCTs closely articulates epistemic and political considerations. In this I follow Paul Shaffer, who claims that RCTs rely on a particular concept of causation (difference-making), that in turns favors specific explanations of poverty (2015). Experimenters tend to look for "difference-makers" (particular resources or assets that the poor might be lacking) and neglect to analyze poverty as the result of complex social interactions. RCTs construct a "vigorously un-relational" approach to poverty and "den[y] the production and relationality of poverty from the global North and among the rich." (Webber, 2015, p. 48).

Disciplining the poor through the markets?

The market-based approach to poverty-reduction postulates that poverty can be combatted through a better inclusion of the poor in various markets (financial markets, labor markets, commodity markets). Scholars have fought this view, wary that the market-based approach to poverty was just yet another face of neoliberalism. Authors have made that argument on microcredit (Fouillet et al., 2016 ; Rankin, 2001) and micro-enterprise (Elyachar, 2002). Other authors have adopted a more nuanced analysis of such market-based approach and wondered if an "ethicalization of market rule" (Roy, 2012a) was at work, providing some form of care to otherwise neglected populations (Cross, 2019 ; Redfield, 2018). Céline Cholez and Pascale

Trompette examine the tensions and conflicting imperatives of the market-based provision of energy to the poor (2019). Economic geographer Christian Berndt shows the affinity between the market-based approach to poverty and the advent of experiments in development economics (Berndt, 2015). There is an analytic shift in economics, from studying market failures to studying the failure of the poor to successfully interact on markets. As a consequence, there is a growing interest for behavioral interventions geared at achieving the transformation of the poor themselves, for instance by transforming them into entrepreneurs (Dolan, 2012 ; Dolan and Rajak, 2016) or into disciplined utility consumers, able to pay their bills on a defined schedule (Von Schnitzler, 2008, 2013). The dissertation offers an original empirical contribution to this scholarship, by recounting the intervention of a team of economists in an attempt at engineering a market for extremely poor people. More specifically, the dissertation examines the experimental crafting of the prices at which to sell clean energy artefacts and services to off-the-grid rural dwellers. Beyond the analysis of the making of experimental prices, I also ask: what are the emergent effects of conducting pricing experiment? What type of transformations are sought and fostered through such an experiment?

Addressing "global poverty" with fragmentary experiments?

What is the "global" and what is "globalization"? Faced with the ubiquitous use of the terms, scholars have tried to conceptualize the global. Three of these attempts have inspired my own inquiry about the construction of poverty as a global object.

Development anthropologist James Ferguson has challenged the metaphor of the flow, which conveys the idea that people, money and commodities flow through territories, like a river irrigates the land it flows through. Studying extractive industries in Africa, Ferguson describes jumps and hops (Ferguson, 2005, 2006). Investments and commodities land in zones where value can be extracted (e.g. mines, oil fields) and jumps out, flying over the territories lying around these "enclaves." The enclaves are neatly and sharply separated from the rest of the country[20]. These separations are materialized by fences, patrols, and a very controlled access – often, workers literally fly in and out. Separations are often also fiscal, and legal. The idea of the enclave suggests that globalization has indeed reached Africa – but in a very targeted

[20] Anthropologist Hannah Appel describes an oil platform in Equatorial Guinea, in which expatriates and their families lived secluded lives in a place which much resembled a Texan suburb (Appel, 2012a).

manner and for the purpose of extracting value out of it. Globalization, thus, is not synonymous with economic development[21].

In a similar attempt, anthropologist Anna Tsing, also interested in globalization, opposes the narrative according to which people, money and commodities circulate freely, fluidly and seamlessly (Tsing, 2005). She coined the concept of "friction" to describe the productive, but also straining encounters produced by global interconnections. She proposes an "ethnography of global connections" in rainforests where indigenous people, migrant woodworkers and urban ecologist activists meet, against the backdrop of brutal deforestation led by foreign investments. The rainforest is a "zone of awkward engagement": a place in which protagonists of different cultures, and with rival interests, meet – this notion is a heuristic way to approach the field site of an RCT too. In a different book, also dedicated to an expression of global capitalism, she describes "patches", places in the world where value can be extracted, in the form of an elusive wild mushroom and sold at high prices to Japanese gourmets (Tsing, 2015). Tsing's patches, like Ferguson's enclaves suggest that the global can be discontinuous and made of a patchwork of scattered areas.

Another approach to global space that irrigates this dissertation is political geographer Andrew Barry's concept of technological zone. Barry proposes to define "forms of space which are neither territorially bounded nor global in their extension, yet are of considerable political and economic significance" (Barry, 2006, p. 239). A technological zone can take one of the three following forms: (1) "metrological zones" are characterized by the development of homogenous forms or measurement; (2) "infrastructural zones" are spaces within which connectivity of infrastructures is ensured by common connection standards; (3) "zones of qualification" correspond to spaces within which there is a common ground for assessing objects and practices. These zones, Barry explains, are less constraining than Michel Foucault's apparatuses (*dispositifs*), yet they shape relations between people and things, and they do have a "normative force." Drawing on Gilles Deleuze's notion of "agencement", Barry defines the zones as "an agencement or assemblage that accelerates and intensifies agency in particular directions, and with unpredictable and dynamic effects" (Barry, 2006, p. 241). The reason why the concept of zone presents an interest for this dissertation is that it provides a perspective on

[21] Quite the contrary: such enclaves tend to favor what Hannah Appel calls "infrastructural violence", and to be detrimental to the populations living around the enclave (Appel, 2012b)

how distinctions between "Western" organizations and their "non-Western" counterparts are forged[22].

> "The analysis of technological zones lies somewhere between the anthropology of science and technology and post-colonial studies of geography and politics. On the one hand, it implies the need for analysis of the historical construction of particular political and economic spaces, and the specificities of the materials, practices and locations which they transform, connect, exclude and silence. On the other hand, it implies attention to the ways in which the formation of technological zones has become critical to the constitution of a distinction between global/Western political and economic forms and their non-Western others." (Barry, 2006, p. 250).

Interestingly, all three authors develop a way of conceptualizing global space in relation with the study of an extractive industry (mines, forests, oil). My object might look quite different, but poverty (as capitalism) needs to be made global, to be constructed as a global object. This work looks into the concept of "global poverty" as it is constructed through the action of the "randomistas." How is poverty constructed as a global object? Expensive and difficult to implement, RCTs are often conducted on small samples, covering a limited geographical area. Yet the question "what works" to reduce poverty, as it is asked by the randomistas, is a global one. How do RCT proponents bridge the gap between a series of local experiments and a global approach to poverty? I try to qualify the spaces of poverty enacted by RCTs.

The Kianga Energy Research Project: a case study

The dissertation focuses on one empirical case, anonymized as the Kianga Energy Research Project. This project took place in an East African country, between 2015 and 2019. It brought together three entities.

(1) Kianga Energy Ltd. is a social business founded in the late 2000s. It distributes low-cost solar LED lights in off-grid villages, through the creation of micro-entreprises operated by small groups of villagers. Although it is a for-profit organization, Kianga Energy Ltd. heavily relies on philanthropic donations and grant money to finance its operations; hence it needs to justify and account for its social nature carefully.

[22] In so doing it offers an alternative to cultural explanations for such divides (Abu-Lughod, 1996).

(2) A small network of economists and decision scientists from various parts of the world answer to a call for research proposals about gender and energy. The call was issued by a European NGO, anonymized as Womenergy, that specializes in developing expertise on the issues related to gender and energy poverty. The researchers proposed to evaluate the impact of the micro-enterprises in the villages where Kianga Energy Ltd. rolls out its business. They focused on the impact of female micro-entreprise and of the access to cleaner and cheaper lighting sources on the villagers' welfare. Their proposition was accepted, together with four other projects. They became the "Research Group 5", and obtained funding for conducting multiple randomized controlled experiments.

(3) A large US-based international organization specialized in conducting randomized controlled experiments, anonymized as Evidence against Poverty (EvaP), was contracted by the Research Group 5 to implement the experiments, and to survey the villagers.

The Kianga Energy Research Project is a complex experiment, actually composed of several entangled RCTs – more details will be provided in chapter 3, but I briefly present the largest four components of the project here. The most basic RCT compares villages in which a Kianga micro-enterprise was created to villages where no Kianga micro-enterprise was created. More precisely, people who actually became micro-entrepreneurs were compared to people who volunteered to become micro-entrepreneurs but who were eventually assigned to the control group. On the top of this basic RCT, another one randomizes the gender composition of the micro-enterprises. Both the treatment and the control group are randomly broken down between all-female, all-male or mixed micro-enterprises. Finally, two other RCTs consist in selling the same good or service (e.g. a solar light; a battery charging service) to different people, at distinct and randomized prices.

Besides this case study, I also analyze various corpuses of documents (e.g. handbooks, scientific article, pedagogical material, appearances in the media, policy briefs), which do not directly pertain to the Kianga Energy Research Project, but to the use of RCTs in development economics in general. There is thus an ambiguity to address here: do I study one particular RCT, the Kianga Energy Research Project, or poverty-reduction RCTs in general? Do I study RCT as a standardized impact evaluation methodology or RCTs as variegated experiments taking place all over the globe? One the one hand, RCT-proponents strive to create standards for RCTs, by publishing a wealth of pedagogical material and resources geared at providing guidance to economists who are setting up an RCT project. On the other hand, the staff tasked with implementing the RCT in the field experienced many difficulties that were precisely

related to the high degree of standardization of the experimental methodology: the project was not conceived for the particular place where it was carried out. To make it work, the fieldworkers had to adapt it to the field site, in various ways (recounted in chapter 2). RCTs are thus characterized by that tension between a standardized, placeless methodology and the diversity and variety of places where they are carried out. Most of the time in this dissertation, I use the plural form and refer to RCTs, assuming that they take many different forms. My object is the Kianga Energy Research Project in the making, such as it unfolded in the field.

The protagonists

The fieldworkers

The principal protagonists of my account of RCTs are the fieldworkers hired by the country office of EvaP to implement some features of the experiment and to conduct surveys in the villages. Overall, I met about forty fieldworkers and followed a dozen of them at work. They are college-educated, urban women and men, roughly aged 20 to 35. They see their work for EvaP as a casual job, that they often enjoy, while finding it difficult at the same time. The enumerators, composing the bulk of the staff, work by teams of five people, placed under the responsibility of a team supervisor. A few experienced enumerators are promoted as mobilizers, or backcheckers: their role is explained in chapter 2. All the fieldworkers report to Marek, the Kianga Energy Research Project's field manager, who himself reports directly to the Research Group 5. He has the difficult task of implementing the experimental protocol defined by the economists and organizing the fieldwork.

Unlike the economists, the fieldworkers cultivate no particular attachment to the RCT methodology: they more often describe the Kianga Energy Research Project generically as a research project than as a randomized experiment. They fieldworkers were not too concerned with the promotion of RCTs, but busy with solving the many practical problems that arise in the field. They are also very different from the consultants who often populate the accounts of research projects (Boileve, 2020 ; Mosse, 2005 ; Rottenburg, 2009a), for a similar reason: they have nothing to prove, no view to defend. They strive to implement the experiment, while casting a lucid gaze on it.

The villagers

I will call the people enrolled in the Kianga Energy Research Project the villagers, for several reasons. Beneficiaries does not seem appropriate: it is uncertain whether people actually

benefited from the experiment. Participants does not work well either, because the extent to which people participate in the experiment varies a lot, depending on their assignment to the treatment or control group and their position as micro-entrepreneurs or potential consumers. Moreover, speaking of the villagers also encompasses all the people who will just be around, witness and comment on the scene and contribute to the general effervescence. The other reason why the villagers sounds right is because the experiment, as a scalable design, is built on villages as its basic unit. As I will show, the experiment is based on the villages not only as administrative units but also as commercial and epistemic units. Finally, the fieldworkers sometimes mention "the village", not to refer to one place in particular, but to a poor, traditional, rural world with which they are familiar but from where they have been estranged. The village and its inhabitants remain somewhat mysterious to the fieldworkers – and to me as an ethnographer. Contrary to global health anthropologist Crystal Biruk (2017), who studied the rolling out of a demographic survey in Malawi, I have neither interviewed villagers nor have immersed with them[23]. There are several reasons for that. First, I was reluctant to add a layer of investigation on the top of the surveys conducted as part of the experiment, which I found invasive and time-consuming enough. Having no counterpart to offer was a further reason not to ask the villagers for their time and energy. Moreover, my mastery of the language of the country did not go beyond what is necessary to greetings, grocery shopping, moto-taxi hiring and a couple of proverbs[24].

The economists and the donor organization

The economists of the Research Group 5 are scattered across three universities, each one located on a different continent, in three different emergent countries. Some of them are professors, and the others are their graduate students. I never met any of them in person, but I talked with the principal investigators at the occasions of several phone meetings. They struck me as being busy and under pressure; they were working on several research projects besides the Kianga Energy Research Project.

Their main funder, Womenergy, is a quite an unusual donor organization. Actually, it is more of an intermediary, managing a large endowment received from the public aid agency of a rich

[23] At a time when most development anthropologists would study aid recipient populations, James Ferguson invited scholars to shift their scrutiny to development agencies and professionals (1994). Now it seems that the tendency has reversed.

[24] Although by the end of my field trip I could understand most of what was said during the interviews performed by the fieldworkers with the villagers.

country. With this important budget, Womenergy simultaneously finances several research projects on issues pertaining to gender and energy. Womenergy strives to create synergies between the various research projects in its portfolio: they are all placed under the supervision of one researcher who acts as a principal investigator and is tasked with synthetizing the findings of the different projects.

A complete anonymization of the project

The Kianga Energy Research Project only recently ended and members of the Research Group 5 are still in the process of publishing their experimental results in the form of scientific articles. Moreover, it remained unclear to the members of the Research Group 5 that I was conducting my doctoral research on their research project. Despite several attempts at clarifying my object of research, they kept regarding me as a colleague, or rather as a sort of intern, studying alongside them with a different approach. I detail this ambiguity more in chapter 3. For these two reasons, I chose to anonymize the project, by changing the names of the various organizations involved as well as people's names. For anonymization's sake I also introduced minor inaccuracies (e.g. in the number of villages included in the experimental sample). Finally, I do not disclose the name of the country where the project took place to avoid easy identification. As a consequence, I do not refer to national institutions or particularities of the country, and do not mention the currency when mentioning amounts of money. Am I reproducing the randomistas' approach by overlooking national specificities? I would answer that anonymizing the country does not hamper my analysis in any way. Unlike Ferguson in *The Anti-Politics Machine*, I am not trying to offer an analysis that would challenge the Research Group 5's findings to prove them wrong or check them against empirical elements I would have collected myself. I seek to describe the Kianga Energy Research as it was implemented in the field sites by the fieldworkers, and the "friction" (Tsing, 2005) arising along the way.

Empirical investigation method

The Kianga Energy Research Project case study was carried out between November 2015, when I first approached EvaP, and February 2017, when I had my last contacts with the Research Group 5. I have continued to read the publications of the Research Group 5 after that date. The most intense phase of my case study took place between October and December 2016. During eight weeks, I shadowed several teams of enumerators hired by the local office of Evidence against Poverty, as they were implementing various features of the experiment (e.g. organizing

lotteries or solar lantern distributions) and conducting the baseline survey with the villagers. I accompanied the fieldworkers in sixteen different villages, some of which we visited multiple times. I spent most of my time with a team supervisor anonymized as Lorie and her team (the composition of which evolved in time), but also shadowed other teams. I occasionally helped the fieldworkers with small tasks. Most of the time stood or sat by them, observing what they were doing, and asking them questions. With the exception of one formal recorded interview with the field manager anonymized as Marek, most of my data consists in detailed ethnographic notes, compiled into a 105-page document. My notes were enriched by continuous discussions with the enumerators, pictures and documents collected during fieldwork.

In early 2016, from my desk in Paris, I spent one month helping the principal investigators of the Research Group 5 with a "qualitative interview campaign" required by the main funder of the project, Womenergy. The researchers had been asked to interview people from various companies and NGOs working in the off-grid energy sector, so as to ensure that their research questions and findings would have a general scope of application. The Research Group 5's principal investigators were unenthusiastic about it. Indeed, this exercise was imposed on them by their unsatisfied sponsor – Womenergy's interlocutors were afraid that the research design proposed by the Research group 5 was too determined by Kianga Energy Ltd.'s singular business model. I helped the principal investigators with writing a questionnaire, conducting phone interviews with respondents, coding the interviews. Then, I wrote a few pages of synthesis that the principal investigators could reproduce in a report they submitted to Womenergy. Womenergy was happy with the report: this is more or less the story of how I earned my ticket to the field site. During this collaboration, I participated in several phone meetings with the principal investigators of the Research Group 5. I also received a huge number of documents (e.g. reports, internal notes), sent with very little explanation, as email attachments. These documents gradually made more and more sense as my case study progressed, either as bits and pieces of the experimental protocol, or as elements of institutional context.

In December 2016, I traveled to a large city in South-Asia and participated in the annual program meeting organized by Womenergy to monitor the five research projects financed as part of its research program. The members of the Research Group 5 were all prevented from attending the meeting by various life events and family emergencies. Running out of options, they asked me to attend and to act as the only representative of the Research Group 5. I spent an intense week working with Womenergy and the four other research groups. The participant

observation I had hoped to conduct became observant participation, and more and more, straight participation. The day informally started over breakfast with other participants and group activities continued late into the evening. The work to perform on behalf of the Research Group 5 ate up the little free time I had; as a result, I was not able to produce a proper ethnographic account of the workshop: the workshop is not recounted in the dissertation. However, I learnt a lot and this week has renewed and completed my understanding of the Kianga Energy Research Project, and thus greatly informs the arguments of this dissertation – especially in chapter 3. The meeting shed light on the tensions between the Research Group 5 and the funders about what evidence-based policy should be.

These three different phases in my fieldwork enabled me to focus consecutively on the different partners involved in the project. The academic researchers, the fieldworkers (and to a lesser extent, Kianga Energy Ltd. staffers and the villagers) and the sponsor (Womenergy). However, I exploited more intensely the data collected during my time with the fieldworkers, for several reasons. First, RCT practitioners tend to be very protective of their field sites: fellow PhD students investigating RCTs have been welcomed in the offices, but prevented from visiting the field sites. By a lucky turn of events, I was authorized to accompany the fieldworkers on their daily trips to the field sites. Examining RCTs from the experimental sites rather than other perspectives (offices, conferences, published material) has enabled me to look into in the blind spots of this device. It allows to investigate the politics of RCTs not as the deliberate result of the concerted action of RCT proponents[25] and evidence-based policy enthusiasts, but as the emergent and unplanned effects of the encounter between the RCT and its recipients. What happens when the experiment is being implemented on the villagers, and what can be learnt from it about the politics of poverty embedded in the practice of RCTs? This approach draws on the concept of "friction", which is useful to describe "zones of awkward engagement" (in this dissertation, the mutual trying exerted by the experimental device and by the villagers on each other) between different groups (Tsing, 2005).

[25] I often use the term RCT-proponents, that I find useful to refer not only to economists practicing RCTs, but also to a larger community of supporters, such as people working in an organization promoting evidence-based policy, decision-makers convinced of the usefulness of RCTs, etc.

Outline of the dissertation

The five chapters of the dissertation all defend the thesis that RCTs produce a micropolitics of poverty.

Chapter 1 defines micropolitics of poverty, and clarifies what this proposition owes to the works of the French philosophers Michel Foucault, Gilles Deleuze and Félix Guattari, who pioneered the concept of micropolitics. Then, the chapter details two components of the micropolitics of poverty: the fragmentation of the world and the disentanglement of the causes of poverty. The third component, the containment of poverty action, is addressed in chapters 3, 4 and 5. Chapter 1 is the only chapter that does not draw on my case study at all, but on a corpus of documents pertaining to the use of RCTs by development economics in general.

Chapter 2 zooms into the field site and shows how the fieldworkers, in a very concrete manner, turn a collection of remote villages into an epistemic fragment of the world. More generally, the chapter sheds light on how exactly fragmentary field sites are investigated and labified during an RCT. While the chapter regards fieldwork as a series of operations embedded in global dynamics, it pays a lot of attention to the "molecular politics"[26] of the fieldwork. RCT is a very fieldwork intensive methodology. Following the enumerators at work, I question the fieldwork's *in situ* effects. How and at which cost is data produced? What are the effects of the encounter between the fieldworkers and the villagers? I contend that fieldwork itself (rather than the evaluated intervention) might play an important role in shaping aspirations of a desirable future in the villages.

Chapter 3 is an attempt at making sense of what is recounted in chapter 2 from the point of view of the Research Group 5 economists. What are they seeking to do with the Kianga Energy Research Project? How do they problematize poverty? Which figure of the global poor emerges through their work? The chapter analyzes the political and epistemic statements produced by the economists during the experiment. Empirically, it focuses on the branch of the experiment dedicated to female entrepreneurship.

Chapter 4 focuses on one branch of the experiment that is geared at testing different prices for the solar LED lights commercialized by Kianga Energy Ltd. The chapter describes the construction of an experimental price and its effects on the experimental field site. The pricing

[26] More details on this term, borrowed to Gilles Deleuze and Félix Guattari, appear in chapter 1.

experiment suggests that researchers are investigating economic models that could enable the poor to access basic goods and services *despite* an extremely low income. This comes in support to the claim that such interventions tend to create a separate, contained way of fostering a better life, undermining a possible commensurability of life in places inhabited by the poor and other parts of the world.

Chapter 5 discusses the techno-politics of humanitarian artefacts (such as the solar light distributed by Kianga Energy Ltd.). Designed and marketized especially for the poor as an alternative to a better (e.g. state-run, infrastructural) provision of services and utilities, these small life-enhancing objects, that can be regarded as micro-infrastructures, participate in the definition of humble and limited promises for the future. These micro-infrastructures shape people's expectations and aspirations. They contribute to entrench a separation between the poor who receive them and the rest of the world. This separation is accomplished through two channels. First, providing the poor with substandard, minimal infrastructures, contributes to create a "zone of qualification" (Barry, 2006) where the criteria to assess quality of life are completely disconnected from the criteria used in other places – in particular places where these devices are designed and conceived. Second, the marketization of these micro-infrastructures also produces an effect of disconnection: distributing such devices actually does not involve an extension of markets, but requires the engineering of new markets, from scratch, specifically for poor customers.

> Where do the poor come from? was the question raised by a bevy of pamphlets which grew thicker with the advancing century. The causes of pauperism and the means of combating it could hardly be expected to be kept apart in a literature which was inspired by the conviction that if only the most apparent evils of pauperism could be sufficiently alleviated it would cease to exist altogether. On one point there appears to have been general agreement, namely, on the great variety of causes that accounted for the fact of the increase. Among them were scarcity of grain; too high agricultural wages, causing high food prices; too low agricultural wages; too high urban wages; irregularity of urban employment; disappearance of the yeomanry; ineptitude of the urban worker for rural occupations; reluctance of the farmers to pay higher wages; the landlords' fear that rents would have to be reduced if higher wages were paid; failure of the workhouse to compete with machinery; want of domestic economy; incommodious habitations; bigoted diets; drug habits. Some writers blamed a new type of large sheep; others, horses which should be replaced by oxen; still others urged the keeping of fewer dogs. Some writers believed that the poor should eat less, or no, bread, while others thought that even feeding on the "best bread should not be charged against them." Tea impaired the health of many poor, it was thought, while "home-brewed beer" would restore it; those who felt most strongly on this score insisted that tea was no better than the cheapest dram. (Polanyi, 2001, p. 94)

Chapter 1 – Micropolitics of poverty: Turning the poor into an object of experimental knowledge and poverty action.

Introduction

Over the past twenty years, multiplying experiments on the poor on various points of the planet to produce poverty knowledge and eventually guide global poverty action has become a new mainstream strategy to combat poverty. This experimental approach to poverty has been recognized by prestigious scientific distinctions (including the Nobel memorial prize in 2019) and by laudatory media coverage around the world. More importantly, it has contributed to transform the practices of key aid institutions, such as the World Bank or USAID.

In this chapter, I want to question this strategy, and describe some of its effects in terms of what I call a micropolitics of poverty. Micropolitics does not refer to the size of the entities involved in poverty action, no more than to the scale at which the projects are rolled out. RCT involves large organizations (top-ranking universities from the developed world, international NGOs, private philanthropic foundations, sometimes governments), which mobilize considerable resources to act at a distance and across borders. Micropolitics, thus, does neither refer to localized interventions nor to local political dynamics[27]. Rather, micropolitics describes a certain way of producing a space within which poverty knowledge and poverty action take place. Micropolitics operates through fragmentation of the world and disentanglement of the causes. This chapter delves into the details of how RCT works, how experimental field sites are constructed and in particular, how RCT constructs a space of causes.

In **Section 1**, I explicit my use of the notion of micropolitics. It loosely inherits from the works of French philosophers Michel Foucault, Gilles Deleuze and Félix Guattari, who have pioneered this notion in the 1970s and 1980s. However, I mostly use the term micropolitics in a way that is more specific to the thesis of this dissertation: I wish to express the particular way in which poverty is problematized and acted upon with RCTs. **Section 2** focuses on RCTs as a methodology, and in particular on what places it at the top of the hierarchy of evidence-production methods according to its proponents: its capacity to produce unbiased results. I qualify the type of causality produced by RCT and comment on the extended use of the notion of "unbiasedness" by RCT proponents. In their efforts to achieve unbiased causality relations, the experimenters construct their field sites not as microcosms representing a larger world, but as fragments of the world. Whereas they attentively study what happens inside of this fragment, they leave the question of the relationship between the fragmentary field sites and the world at large unanswered. **Section 3** is an attempt at drafting a genealogy of the intellectual foundations of RCT. The RCT movement, in the wake of older poverty knowledge traditions, turns the poor, their choices and behaviors into a central object of knowledge production and poverty action.

[27] The meaning of "micropolitics" in the writings of French anthropologists of development, around the founding figure of Jean-Pierre Olivier de Sardan and the APAD (association for the anthropology of social change and development), is more centered on local politics. In such works, micropolitics describes the way in which the entanglements of power dynamics taking place at various scales unfold in local arenas (Olivier de Sardan, 1993 ; Olivier de Sardan, 1995).

Section 1: Micropolitics. Insights from the work of Foucault and Deleuze-Guattari

Authors who use the notion of micropolitics to analyze contemporary issues often link it back to Gilles Deleuze and Félix Guattari, and to Michel Foucault as well (Bérard, 2017 ; Bignall, 2008 ; Bissell, 2016 ; Fox and Klein, 2020). The *Encyclopedia Britannica* offers a compact definition of micropolitics, that seems to draw mostly on Foucault's work.

> "Micropolitics, small-scale interventions that are used for governing the behavior of large populations of people. […] Micropolitical power can be usefully distinguished from legal power. Law depends on the prohibition, interdiction, and restriction of behavior. In contrast, micropolitical techniques depend on instilling the attitudes, dispositions, skills, and capacities to shape behavior. Because they do not depend on legal power, micropolitical techniques allow the state to devolve functions of governance to other networks of administration." (Scherer, 2015)

In this definition, a salient aspect of micropolitics is that it is not carried out by a sovereign power. Thanks to micropolitics, non-state actors or entities are able to govern a population without any legal coercion capacity. Micropolitics is what makes governmentality possible, through education and social conditioning techniques. In that other definition below, which seems to borrow also from the work of Deleuze-Guattari, the dichotomy does not concern the entity that acts upon the population; it concerns the object that is acted upon. Micropolitics deals with disseminated objects, that are not necessarily political in a traditional sense.

> "What we call 'micropolitics' deals with small-scale, scattered power structures, as well as with controls mechanisms that are part of social life and day-to-day life. According to a modern point of view, macropolitics appears as a rationalized exercise of power dealing with systems, while micropolitics includes different forms of spontaneous epistemic or cultural power." (Chamayou, 2018, my translation)

The author also indicates that micropolitics may arise spontaneously, and not as a deliberate effort to govern. Both definitions suggest that micropolitics might be an adequate concept to study RCTs. RCTs are conducted by non-state entities, and on specific populations, to evaluate dispersed and uncoordinated initiatives. In this section, I clarify my definition of micropolitics with regards to Foucault's and Deleuze-Guattari's legacy, and with regards to the object that I am studying.

1.1 The individual as a site of political transformation

Michel Foucault elaborates the concept of "microphysics of power", or "micropower", in *Discipline and Punish* (Foucault, 2008a [1975]). He comments on the shift from spectacular and sophisticated public killings to the carceral institution as a response to crime by the sovereign power. Beyond the question of legal punishment, Foucault investigates the political technologies used to control the population and maintain social order. He analyzes apparatuses (*dispositifs*), such as the time-table (among other examples) that tightly organizes the time-use of people in various institutions. Such apparatuses substituted discreet, routinized micro-punishments and everyday life coercion to public physical violence to train and straighten deviant bodies and souls. These apparatuses were aimed at enforcing discipline, meaning an orderly and efficient use of the human body, achieved through the individual incorporation of social norms as well as the organization of individual bodies in space and time. Moreover, Foucault argues that the advent of such technologies of power was associated with important scientific developments: man was constituted as an object of knowledge, and new fields of scientific investigation opened as a result of that shift in law enforcement practices.

> "The question is no longer simply: 'Has the act been established and is it punishable?' But also: 'What is this act, what is this act of violence or this murder? To what level or to what field of reality does it belong? Is it a phantasy, a psychotic reaction, a delusional episode, a perverse action?' It is no longer simply: 'Who committed it?' But: 'How can we assign the causal process that produced it? Where did it originate in the author himself? Instinct, unconscious, environment, heredity?' It is no longer simply: 'What law punishes this offence?' But: 'What would be the most appropriate measures to take? How do we see the future development of the offender? What would be the best way of rehabilitating him?' A whole set of assessing, diagnostic, prognostic, normative judgements concerning the criminal have become lodged in the framework of penal judgement. Another truth has penetrated the truth that was required by the legal machinery; a truth which, entangled with the first, has turned the assertion of guilt into a strange scientifico-juridical complex." (Foucault, 1995, pp. 39–40)

This passage illustrates the complexification of the juridical investigation, which aims at answering subtler questions, and to identify finer causal mechanisms. It illustrates the ambition to respond to crime not only in a legitimate manner, but also in an adequate, proportionate and efficient manner. At the heart of the articulation between the development of human sciences and the birth of the carceral institution, Foucault unearths a transformation of political action, which is relocated within individual bodies, especially – but not exclusively – in the context of enclosed institutions (e.g. prisons, boarding schools).

> "I am not saying that the human sciences emerged from the prison. But, if they have been able to be formed and to produce so many profound changes in the episteme, it is because they have been conveyed by a specific and new modality of power: a certain policy of the body, a certain way of rendering the group of men docile and useful. This policy required the involvement of definite relations of knowledge in relations of power; it called for a technique of overlapping subjection and objectification; it brought with it new procedures of individualization. The carceral network constituted one of the armatures of this power-knowledge that has made the human sciences historically possible. Knowable man (soul, individuality, consciousness, conduct, whatever it is called) is the object-effect of this analytical investment, of this domination-observation." (Foucault, 1995, pp. 544–545)

A first way of understanding micropolitics is thus, following Foucault's insight, to acknowledge that individuals constitute sites of political transformations. This is one important component of the micropolitics of poverty: RCTs attempt at transforming the poor themselves to solve poverty.

These transformations result from (and participate in) the entanglement between relations of power and relations of knowledge production (between subjects and objects of knowledge). On the one hand, the birth of the carceral institutions required new scientific corpuses to guide and justify new practices; on the other hand, the carceral institution enabled and enhanced scientific activity, by making a population of individuals available and easily turned into objects of knowledge. The power-knowledge nexus is defined as follows:

> "[T]here is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations. […] In short, it is not the activity of the subject of knowledge that produces a corpus of knowledge, useful or resistant to power, but power-knowledge, the processes and struggles that traverse it and of which it is made up, that determines the forms and possible domains of knowledge."(Foucault, 1995, p. 55)

Foucault stresses the joint dynamics between the evolutions of scientific and political activities. This insight is particularly relevant as far as RCTs are concerned: the growing use of RCTs has taken place in the context of a re-composition of international development around new, non-state actors. As multilateral agencies, private philanthropic foundations and NGOs grew in importance, their action called for a renewal of the production of poverty knowledge and created opportunities for such a renewal to happen (de Souza Leão and Eyal, 2019). RCTs are particularly compatible with the needs and capacity of these new actors: they cannot enforce laws but seek to create new norms and habits, supposedly more conducive to development. Moreover, whereas it is expected that governments should serve all the citizens, NGOs or social

businesses are not blamed for serving a small part of the population only. They are not accountable in the way states may be, and have more room to maneuver and target restricted geographic areas, with little political pressure in case of project failure.

1.2. Biopolitics and the search for economic efficiency

In *Security, Territory, Population*, a publication posthumously edited from the seminar he taught in the year 1978 at Collège de France, Michel Foucault pursues his reflections on power (Foucault, 2004a). He identifies a shift in the practice of power in the 18th c. in Europe. The sovereign is no longer characterized by his power to punish and kill those who oppose him, but by his capacity to foster life. Subjects who are alive, numerous, healthy and productive reflect the power of their sovereign. Life itself (understood as a combination of biological processes) becomes a political object. Foucault coins the term "biopolitics" to describe this modality of power (Foucault, 2001, 2004b). The birth of biopolitics is to be articulated with the emergence of population as an object of knowledge in the 18th c. A population can be counted and described, thanks to statistics and demographics: it is characterized by a fecundity rate, a birth rate, a mortality rate, an age distribution, etc. The aim of biopolitics is not to rectify every individual (through technologies of discipline), but to ensure that the population, as a whole, is growing, healthy and productive (through mechanisms of security).

RCTs definitely pertain to the realm of the objects that can be grasped with the help of Foucauldian concepts and insights – which social scientists have done convincingly (Bardet and Cussó, 2012 ; Labrousse, 2010 ; Webber and Prouse, 2018). Biopolitics adequately expresses the goals pursued by the type of interventions evaluated through RCTs: turning the poor into healthier and more productive individuals, better equipped to sustain their families. The RCT movement has placed an important emphasis on issues such as hygiene, sexual and reproductive health, or agriculture; all things concerning life itself, life as being affected by biological processes such as reproduction, disease, malnutrition, etc. RCTs describe the experimental sample as a population, with a large array of average indicators, and measure the impact of interventions by estimating average improvements.

Ironically, Foucault barely mentions biopolitics in *The Birth of Biopolitics*, a publication edited from the 1979 season of the aforementioned seminar. In the summary of the seminar, written at the end of the course, Foucault explains why:

> "The theme was to have been 'biopolitics,' by which I meant the attempt, starting from the eighteenth century, to rationalize the problems posed to governmental practice by

> phenomena characteristic of a set of living beings forming a population: health, hygiene, birthrate, life expectancy, race... We know the increasing importance of these problems since the nineteenth century, and the political and economic issues they have raised up to the present. It seemed to me that these problems were inseparable from the framework of political rationality within which they appeared and took on their intensity. This means 'liberalism,' since it was in relation to liberalism that they assumed the form of a challenge. How can the phenomena of "population," with its specific effects and problems, be taken into account in a system concerned about respect for legal subjects and individual free enterprise? In the name of what and according to what rules can it be managed?" (Foucault, 2008b, p. 317)

Foucault insists on the simultaneous emergence of liberalism on the one hand and of population as an object of government on the other hand. The act of governing populations, for Foucault, cannot be understood outside of the influence of liberalism. Liberalism is characterized by the idea that the government must be limited in its scope, and that its limiting principle is to be found in the market economy. The market was promoted as a truth-telling instance: economic thinking and reasoning penetrated the art of governing, that had been so far overly impregnated with juridical thinking. Markets were believed to be driven by natural laws and mechanisms, and thus, to constitute appropriate touchstones to assess the quality of government (Foucault, 2008b, p. 32). Good policies should be conducive to smooth-running markets, while bad policies are expected to be sanctioned by crazy prices, that are too far removed from the "natural prices" and may cause shortages and dearth, potentially harmful to the population[28]. Furthermore, neoliberalism[29] has also consisted in extending economic reasoning to objects that fall beyond the traditional scope of economics: any human choice or behavior can be analyzed thanks to economic models. RCTs certainly represent a contemporary occurrence of the economization of the government of the issue of poverty. RCT proponents do not systematically promote market-based solutions: there is a mix of market-based and government-run, publicly funded programs in their global portfolio, for reasons that are further discussed in chapter 3 of the present dissertation. In any case, the question of economic efficiency and the search for the optimum is at the heart of RCT proponents' reflection – this point is further discussed in the last section of the present chapter.

[28] I will develop Foucault's analysis of the role of the markets as truth-telling devices in chapter 4.

[29] Neoliberalism refers to the early 20th c. American version of liberalism in Foucault's work.

1.3. Micropolitics as texture

The overview provided in the previous pages is brief and incomplete, but it is only meant to shed light on what micropolitics of poverty might mean in the light of Foucault's works. His genealogical analysis of power shows not only that its exercise has evolved into forms of governmentality that constrain individuals in increasingly subtle and fine-grained ways, but also that the development of technologies of discipline, security or government is tightly entangled with the development of scientific activity (e.g. human sciences, economics). My work inherits from Foucault's to the extent that I investigate the transformations that are proposed to the poor through the experiment, deliberately or in an emergent and unintended manner. The experiment, indeed, operates in such a way that it seems to be encouraging the transformation of the participants[30]. In chapter 2, I argue that through the data collection campaign, the villagers are turned (more or less successfully) into respondents able to answer complicated or out of place questions for two to three hours at a time. In chapter 3, I discuss the figure of the micro-entrepreneur, micro-enterprise being a perspective that is often touted as a way out of poverty. In chapter 4, I demonstrate that the experiment attempts at transforming the villagers into payers, who are willing to spend the little money they have to achieve some kind of citizenship.

My research addresses the question of power in a way that is different from Foucault's approach. In my observations, there are occasional occurrences of the use of technologies of discipline or coercion[31], to enforce the respect of experimental procedures – these may or may not have a subjection effect on the people who participate in the experiment; this falls beyond the scope of my empirical investigation. But RCTs also exert a softer power, by the manipulation of people's desires, hopes and aspirations. RCTs often evaluate relatively small interventions, that are unlikely to be life-changing. However, they do roll out an impressive logistic to reach remote places, and participate in connecting these places with a distant, richer world[32].

[30] However, I mostly analyze and qualify the propositions of transformation that are formulated through the experiment. I do not conclude anything as to which extent the villagers are actually transformed by the experiment.

[31] In chapter 4, I describe an experimental sale of solar lights – it is experimental to the extent that participants pay a random price for the lamp. I describe how the fieldworkers, helped with the village authorities, maintain discipline and orderly behavior throughout the event. In Chapters 4 and 5, I explain how the micro-entrepreneurs of the experiment are technologically constrained to charge experimental prices to their clients, and to provide data each time they make a sale.

[32] In chapter 2, I describe an awkward moment when a young man loudly and publicly thanked me – mistaking me for the person in charge – for "bringing electricity to his village".

Deleuze and Guattari's work can help seize those dimensions of micropolitics and go beyond Foucault's power-centered approach. They write about micropolitics in *A Thousand Plateaus* (Deleuze and Guattari, 1987). Micropolitics does not describe different phenomena than macropolitics: rather, the two are different dimensions of the same things. Macropolitics deals with "molar" entities, that are clearly delimited, countable, well determined, rigidly defined and segmented. Micropolitics, on the contrary, describes the behavior of "molecular" entities: they are multiple, infinitesimal, unclearly bounded, fluid, constantly in the process of defining themselves in the encounters with other entities. Molecular entities do not grow and become massive, but they multiply and become pervasive.

> "[M]icropolitics is no less extensive or real than macropolitics. Politics on the grand scale can never administer its molar segments without also dealing with the micro-injections or infiltrations that work in its favor or present an obstacle to it; indeed, the larger the molar aggregates, the greater the molecularization of the agencies they put into play." (Deleuze and Guattari, 1987, p. 204)

Micropolitics is neither a question of size, nor a question of scale. Rather, it seems to be a question of texture and granularity. Deleuze and Guattari take the example of the encounter between two couples, recounted in a novella by Henry James. Such an encounter can be analyzed as involving clear segments (men and women, different social classes). But it can also be analyzed as a set of "less localizable", unpredictable, contingent relations (two of the protagonists happen to develop an intense complicity, around a shared secret). Another example, more clearly political in a traditional sense, is the case of fascism: even in the absence of a totalitarian (molar) fascist regime or party, there are still reasons to be wary, according to the authors:

> "What makes fascism dangerous is its molecular or micropolitical power, for it is a mass movement: a cancerous body rather than a totalitarian organism. American film has often depicted these molecular focal points; band, gang, sect, family, town, neighborhood, vehicle fascisms spare no one." (Deleuze and Guattari, 1987, p. 215)

A rhizomatic network of small organizations, entangled in the day to day social life, is powerful and contributes to shape people's desires and aspirations. This is one important contrast with Foucault's power-centered approach: Deleuze and Guattari are interested in the dynamics of desire. Desire and hope are not to be overlooked when it comes to development (Lachenal and Mbodj-Pouye, 2014 ; de Vries, 2007). Development projects, despite their tendency to fail and not deliver, operate on promises. They produce expectations towards the state or international organizations, aspirations, desire for development; all things that a Foucauldian approach to development might miss.

Deleuze and Guattari's micropolitics has inspired epistemological and methodological choices in recent works. For example, geographer David Bissell analyzes the micropolitics of mobility in the Sydney area (Bissell, 2016). A macropolitical analysis of urban mobility, the author explains, would have consisted in studying the infrastructures of transportation, or the sociology of who (which segment of the population) uses which transportation means, which categories of people win or lose from which public policy, etc. By contrast, the micropolitics of mobility is made of "events and encounters on the move." The author's fieldwork consisted in commuting on a certain train line between Sydney and a distant suburb, at the rush hour, observing what happens between the passengers as they commute, the emotions they experience, and the way their capacities to act and sense are reinforced or diminished in the interaction.

Another recent article, whose authors claim to be doing "new materialist sociology", studies the micropolitics of behavioral interventions. This statement draws on several theoretical influences (Deleuze and Guattari, but also the actor-network theory and feminist theory). It claims the importance of examining the fine-grained texture of the social. The authors analyze the micropolitics of a program financially incentivizing breastfeeding in the UK. They describe how the introduction of a behavioral intervention modifies the already complex and fragile ecology of breastfeeding, with negative effects on families (reinforcement of the burden of the female parent, continuation of painful breastfeeding in a context of financial struggle, etc.).

> "(…) Analysis of this relational ontology is micropolitical—at the level of assemblages, affects and capacities, as opposed to a 'macropolitics' of exterior forces, structures or systems. This means that we do not 'explain' social phenomena in terms of 'macro' forces or structures such as 'neoliberalism', 'racism', 'patriarchy' or 'colonialism'. Rather, we need to explain these supposed explanations by examining interactions and practices such as behavioral policy approaches and explore how these—along with a multitude of other interactions—generate the regularities in social life that have been subsequently reified by social scientists as 'neoliberalism', and so forth" (Fox and Klein, 2020, pp. 8–9)

I take inspiration from this micropolitical approach to analyze RCTs through a series of encounters and events that take place in the experimental field site. Through ethnographic accounts, I try to render the intensity of the encounters and the effervescence produced by the presence of various protagonists, and by the various material artefacts that are part of the experiment. I describe some of the effects of the experiments that are not those intended by the experimenters, but that spontaneously emerge from the situation.

* * *

Micropolitics of poverty refers to the enterprise of producing knowledge and acting on the poor, through experiments combining entwined scientific and political aims. This first point is inspired from the Foucauldian version of micropolitics. Moreover, the geographic and topographic thought developed in the work of Deleuze and Guattari resonates here as an invitation to go beyond the increasing focus on individuals as political sites where the problem of poverty can be governed, and to question the type of epistemic and political space created by RCTs. Within these spaces, micropolitics of poverty plays out at a "molecular" level: it brings in an in-situ effervescence which stimulates a collective aspiration to a better life. The definition of micropolitics I propose in this dissertation therefore stands at the nexus of knowledge, power and desire. The remaining two sections of the present chapter aim at showing how RCTs effectuate this micropolitics. RCTs give shape to specific epistemic and political spaces of poverty, within which this micropolitics is enacted. I develop two notions, fragmentation and disentanglement, to describe the processes through which these spaces are constructed.

Section 2. Micropolitics: field sites as epistemic fragments of the world

Very early on, RCTs have been heralded as the "gold standard" of impact evaluation in poverty-alleviation policy-making, inheriting from the gold standard status of RCTs in medicine[33]. RCT is a quantitative method relying on custom, extensive data collection and sophisticated statistical analysis. Its high level of technicality and mathematical formalization creates an impression of scientific rigor that contributes towards the gold standard status of RCTs. The promise of RCTs is a clean and reliable identification of relations of causality, which has long been an empirical challenge for economists. The increase in the computing power of machines in the 1990s led to the multiplication of "observational studies" (i.e. econometric analyses performed on cross-sectional datasets) yielding contradictory results about aid effectiveness. William Easterly describes the ping pong game between aid-proponents and aid-skeptics. In the second chapter of *The White Man's Burden* (a plea for cutting development aid), he provides detailed account of the succession of pro- and anti-aid publications, disagreeing on whether or

[33] In medical research as well as in poverty action, the gold standard status of RCT is controversial and debated (Jatteau, 2019).

not larger volumes of aid produce larger increases in GDP (Easterly, 2007, pp. 48–66). More generally, econometrical analyses have posed a number of problems, filling textbook with thought-provoking or absurd examples. Does the positive correlation between income and education mean that educated people earn more money or that higher-income people can afford more education? Does the positive correlation between violent crime and ice cream sales mean that eating ice cream awakes one's homicidal instincts? Or is there a third variable (such as seasonal warm weather) that drives both ice cream sales and violent crimes to increase?

RCTs come as a solution to causal identification problems. Their ultimate gold standard quality is to afford the estimation of unbiased impacts (Abdelghafour, 2017 ; Ravallion, 2019) – which other impact estimation methods cannot do, according to RCT proponents. They claim that only RCT can deliver unbiasedness, and they also insist on the importance of unbiasedness in poverty-alleviation policy-making. In this section, I enter in the details of how RCTs work, and how they are supposedly better-geared at delivering causal identification. I argue that the epistemic fragmentation operated by RCTs is crucial in the process. I also want to stress that this has led to overemphasize the internal validity of results, at the expense of their external validity. How does this type of knowledge, that does not extend beyond the experimental site, help building global responses to poverty?

This section is based on an analysis of the written production of RCT proponents, especially the texts that are either programmatic (explaining the ambition of the RCT movement for international development) or pedagogical (handbooks, methodological papers). My analysis is also indirectly informed by my own experience as a masters' student in a development economics program (2010 – 2012) in which RCT was indeed taught as the "gold standard" of impact evaluation.

2.1. RCT's promises: achieving unbiasedness

2.1.1. Randomized *controlled* trials: what is the control group for?

RCT consists in comparing a group of recipients of a given "treatment" to a group receiving a lesser treatment, or no treatment at all. The units composing the groups can be individuals, but also villages or schools. In both groups, households participating in the experiment are surveyed in-depth just before the inception of the treatment ("baseline" survey), and surveyed again sometime after the inception of the treatment ("endline" survey). In the case of the Kianga

Energy Research Project[34], the endline survey started about 18 months after the baseline survey ended. The same questionnaire was used for both the endline and the baseline survey: respondents were asked the same questions, 18 months apart. These questions aim at measuring various outcomes of interests for the researchers. These outcomes are many; some of them are standard and are measured in most experiments[35] (e.g., household income, household consumption, general life satisfaction) and others are specific to the experiment's object. In the Kianga Energy experiment, there are questions geared at measuring the weekly time devoted to homework by the household's children, and the respondents' aspirations for themselves or their children – the Research Group 5 expects the former to be positively impacted by the provision of solar lanterns, and the latter by female entrepreneurship. The researchers estimate the impact of the treatment by comparing how these outcomes evolve, on average, in the treatment group against how they evolve in the control group. If the situation evolves more favorably in the treatment group than in the control group, the researchers conclude that the treatment has a positive impact.

The type of causality produced by RCT is something that is measured rather than explained. Stories explaining why the treatment caused some outcomes to evolve may accompany RCTs, but they are not a necessary part of the RCT methodology. These stories are not the object of the scrutiny of the epistemic community, and their role is minimized.

> "Duflo sees RCTs as compelling and denies the interpretative role of the observer: 'Randomized evaluations are rigorous. There is no room for interpretation. Either it works or not. If it doesn't work, one can only try something else', she summarized her method in a 2010 interview." (Labrousse, 2016, p. 289)

RCT is aimed at determining whether (and not how) a treatment "made a difference." There is a semantic bridge between the statistical difference-making operation and the moral imperative to act, to "make a difference" in a world plagued by poverty. One experiment after the other, the randomistas pursue the ambition to screen out inefficient interventions and create a repository of policies deemed efficient to alleviate poverty.

[34] As a reminder, the Kianga Energy Research Project is a complex experiment combining several entangled RCTs. It is aimed at evaluating the impact of the activities of a social business, Kianga Energy Ltd. selling low-cost clean energy devices in off-grid areas.

[35] An interview with Marek, Kianga Energy Research Project's Field Manager, suggests that the share of questions that are likely to be found in most questionnaires, regardless of the experiment's object, is important. "The projects have different names, but the questions in the questionnaire, most of the questions… They are just similar to other questionnaires".

> "[W]e argue that there is scope for considerably expanding [the] use [of RCT], although they must necessarily remain a small fraction of all evaluations. The benefits of knowing which programs work and which do not extend far beyond any program or agency, and credible impact evaluations are global public goods in the sense that they can offer reliable guidance to international organizations, governments, donors, and nongovernmental organizations (NGOs) beyond national borders." (Duflo and Kremer, 2008, p. 93)

The political clout of the RCT proponents comes from the articulation between a discourse of scientific progress and a discourse of moral progress (Abdelghafour 2017). In a well-known TED talk delivered in 2010, Esther Duflo compared poverty-alleviation policy-making to the practice of medieval doctors using leeches to cure patients: there was no way to know whether the leeches helped or harmed the patients. Policy-making was based on belief or fads, according to Duflo and her colleagues. "All too often development policy is based on fads, and randomized evaluations could allow it to be based on evidence" (Duflo and Kremer, 2008). Duflo interprets the lack of evaluation as a lack of interest for the effects of anti-poverty policies on the poor's well-being.

> "So what do you do [to the fact that in the world, 25.000 children die every day from preventable causes]? To give the aid, and hope and pray that something comes out of it? Or do you focus on your everyday life and let [it] continue to happen? The thing is, if we don't know whether we are doing any good, we are not any better than the Medieval doctors and their leeches." (Duflo, 2010)

The use of rigorous evidence (rather than "hope and pray") is associated with greater care and less neglect ("you focus on your everyday life" and let children die) for the recipients of poverty-reduction policies.

In RCT, causality is established by exhibiting statistically significant[36] differences between the average variations in the outcomes of the two groups. Let us take an example to understand the role played by the control group in the experiment. In the Kianga Energy Research Project, the treatment group is composed of villages in which a micro-enterprise selling solar lights is

[36] Statistical significance is an estimation of the reliability of a result. It indicates that the probability of error lies under a certain threshold (typically 10, 5 or 1%). In this context, error consists in exhibiting a causality whereas there is none. In the statisticians' vocabulary, a result is significant at 95% when the probability of rejecting the null hypothesis whereas it holds true lies under 5%. The null hypothesis describes a situation in which there is no relation between two variables. Let us note that economist Deirdre McCloskey deplores that too often, statistical significance is rhetorically extrapolated as substantive significance: "You hear a woman screaming for help over your shortwave radio, but the signal is somewhat weak, obscured some by static, so you are not too sure and you do nothing. She might be saying, 'My house is being invaded by robbers. Call the cops!' Or she might possibly be saying 'My house is being painted by jobbers. Walls and tops!' So you do nothing, merely because the signal is noisy." (McCloskey, 1998).

created, and the control group is composed of villages in which no micro-enterprise is created. The researchers are interested in the impact of those micro-enterprises on the welfare of the micro-entrepreneurs' households. Let us take one outcome that is described by the Research Group 5 as a good indicator of poverty-reduction: the household consumption[37]. In the absence of a control group, an impact evaluation would consist in estimating the difference between the average household consumption before and after the treatment. Would a positive difference indicate that improvement in the household consumption was caused by the treatment? RCT proponents argue that there is no way to establish causality between the creation of micro-enterprises and an observed increase in the outcome: other events, external to the experiment, might also have had an influence on household consumption. "Traditional methods of measuring program impact may be subject to serious bias due to omitted variables" (Duflo and Kremer, 2008, p. 93).

Suppose for example, that the region enjoyed an excellent weather during the experiment. The recipients being in their majority subsistence farmers, better harvests might have improved their consumption. Suppose that during the experiment, the government started a new social benefits program, or built a new road, allowing farmers to sell part of their crops in the market more easily, etc. All these other factors positively influencing the outcome of interest (here, household consumption) create a positive bias. The estimation of a before/after difference in the outcome of interest would lead to an overestimation of the impact of the micro-enterprises.

Suppose on the contrary that other factors had a negative influence on households' consumption: a drought occasioning bad harvests, or heavy rains followed by an outbreak of malaria. In the latter case, adults would be unable to work while being ill, and households might face health expenditures (medical visits, drug purchase). In such cases, a before/after difference underestimates the impact of the treatment, due to the negative biases created by these factors.

In the examples given by RCT proponents (e.g., in class, in textbooks), there are often examples of counterintuitive results, that only RCT can produce. A case when the outcome of interest does not increase, or even decreases, is yet compatible with the identification of a positive impact: the treatment may have protected the households from an even larger decrease in their welfare. Conversely, an increase in the outcome of interest is compatible with a null or negative impact of a program, that might have prevented the households to increase their consumption as much as they could have without the program. For instance, the micro-entrepreneurs incur

[37] Source: Final report addressed by the researchers to their main funder, Womenergy.

costs to participate in the micro-enterprise (commitment fee, telecommunications). What if, in the absence of the program, the participants had invested that money in other, more profitable endeavors, eventually leading to a greater increase in consumption? Or what if the participants had simply used that money to purchase things for the household instead?

The control group provides a counterfactual: it simulates a state of the world in which the program would not have happened. The notion of counterfactual is not used only in ex-post impact evaluations but also for valuation purposes. STS scholars Fabian Muniesa and Véra Ehrenstein analyze the notion the counterfactual in a paper focusing on the ex-ante estimation of the value (e.g., in terms of carbon offsetting) of a reforestation project. Their definition of "counterfactual display" is useful to understand what is at stake in RCTs as well.

> "what we call 'counterfactual display': how two future states of the world—one with the project and one without it—are played against each other and how the value of the project is derived from that interplay. We use the term 'display' to emphasize the material-semiotic arrangement of counterfactual operations. These do not rely solely on reasoning and imagination, but also require the production, circulation, and exhibition of documents and devices essential to valuation processes." (Ehrenstein and Muniesa, 2013, p. 162)

In the economists' worlds, the control group "controls for" the other factors that might have an impact on the outcomes of interest. Supposedly, the control group will also be affected by the weather, by governmental social policies, by the fluctuation of market prices, etc. The variation of the control group's outcomes absorbs the impact of all these other factors. As a result, according to the RCT proponents, the difference between the average variations observed in the two groups isolates the pure impact of the program, disentangled from the impacts of other factors, that is, unbiased.

2.1.2. *Randomized* controlled trials: what is the point of randomization?

Various impact evaluation methods use counterfactual comparisons: counterfactuals can be built in different manners. Much of the argumentation of the RCT proponents, when they assert the superiority of their method, is based on the experimental and randomized construction of the counterfactual. In the case of the Kianga Energy Research Project, both the treatment and the control groups are composed of villages in which a group of four people is interested in creating a micro-enterprise, and able to gather a certain amount of money to pay the commitment fee. This method is likely to create discontent: villages that are eligible and willing to participate in the program end up not receiving it. Kianga Energy Ltd. loses potential clients

during the time of the experiment. Other possibilities for constructing the control group exist. For instance, the villages that refuse or are unable to participate in the program could have been used as a control group. But the RCT proponents insist that it is important to compare comparable populations. The random selection aims at avoiding "selection biases". The villages that are willing and able to open a Kianga micro-enterprise (the villages that "self-select" into the program) may have specific characteristics that distinguish them from the other villages. The villagers may have a higher average income, or be more educated on average, etc. They may have access to more resources that will help them to make the most of the program. The random selection of a treatment and a control group, provided a sample that is large enough, guarantees, by virtue of the statistical law of large numbers, that both groups are similar on average.

Let us pause here for a moment. To make sure that the treatment and control groups are similar and comparable, there is a random selection. Moreover, to avoid non-compliance and attrition, the random selection is performed only on the villages that have already agreed to participate in the treatment: the villages that refuse to participate are removed from the sample in the inception of the experiment. Non-compliance refers to the fact that people will not do as prescribed by the random assignment: if a village is assigned to the treatment group but does not eventually open a micro-enterprise, this village we be called "non-compliant". Attrition describes the fact that individuals (or, as in the case of the Kianga Energy Research Project, villages) leave the experimental sample: they stop participating in the evaluated intervention or in the survey. Both non-compliance and attrition pose a challenge for experimenters, who may see their sample reducing in size, which affects the statistical power of their results (Glennerster, 2017, pp. 192–194). This should draw our attention to the fact that the experimental sample is not built so as to be representative of the general population of the geographical area where it takes place. It excludes all the villages that are too resource-poor to seize the opportunity and open a micro-enterprise. It also excludes all the villages that aspire to a higher-end service and find that one solar panel for the whole village is not enough.

Unbiasedness in RCTs is very different from unbiasedness in, say, an opinion poll, in which case the sample of respondents should be representative of the whole population of interest. The sample of an RCT is not representative of the population of the country or geographic area where the experiment takes place: it is a particular fragment of it. The trade-off is the following: to ensure a strong internal validity of the results, the similarity between treatment and control groups and the statistical power of the experiment are prioritized, at the expense of the similarity

between the experimental sample and the general population of the area. This is one feature of what I call fragmentation.

Other impact evaluation methods, though, can achieve a similar result (similarity between the treatment and control groups). Matching, for example, is a quasi-experimental method that consists in artificially constructing a control group by matching each observation (i.e. individual or household) in the treatment group with a similar observation from an existing dataset (typically, a large-scale, multipurpose, longitudinal survey). This way, the distribution of some variables (e.g. age, gender, income, education status) is supposed to be the same in the group receiving a treatment and in the control group. RCT proponents argue that this method is limited, because the balance between the groups is achieved only on a few variables. Other variables are "unobserved", meaning that the dataset used to construct the control group does not include them. Attitude towards risk, for instance, can possibly be measured[38], but it is certainly not measured in many surveys. The use of matching is thus constrained by the variables observed in the dataset used to create the control group. As a result, according to the RCT proponents, the control group might differ from the treatment group on some unobserved variables, which are omitted from the analysis, possibly creating a selection bias. Even further, the RCT proponents insist that "unobservable variables" such as a person's talent, charisma, personal history, etc. can also be sources of bias. The RCT proponents want to create groups that are not only similar on average but in which people are also likely to react similarly to external unexpected events that might occur during the experiment. That might be partly determined by the distribution of unobserved and unobservable variables[39]. Let us take an example: if a new bus route connects the area to a city for instance, the extent to which the villagers will take advantage of this new transportation opportunity may depend on their income (observable variable) but also on, say, the presence of relatives in the city. This is observable, but likely to be unobserved: the economists cannot anticipate everything when they plan data collection.

> "The challenge with this method [matching], as with regression controls, is that it hinges on having identified all the potentially relevant differences between the

[38] Attitude towards risk is measured in the Kianga Energy Research Project. However, neither its measurement (cf. chapter 2 of the present dissertation) nor its analytic use (cf. chapter 3 of the present dissertation) is unproblematic.

[39] The dichotomy between observable and unobservable variables is relevant in the context of an experiment, in which the researchers organize a data collection campaign geared at harvesting the data they need. They can observe (in theory) any observable variable they want. In the cases when researchers use observational data (typically, from longitudinal multi-purpose large-scale surveys), there are also "unobserved variables": observable variables that were not included in the survey.

> treatment and control groups. In cases where the treatment is assigned on the basis of a variable that is not observed by the researcher (demand for the service, for example), this technique can lead to misleading inferences." (Duflo and Kremer, 2008, p. 96)

Finally, the way the villagers will respond to a new bus route may depend on unobservable variables, such as, say, their desire to travel. According to the RCT proponents, only the randomized assignment of villages can result in a similar distribution of both observable and unobservable variables across the groups. They argue that and thus ensure that in both groups, people will, on average, react similarly to external events occurring during the experiment.

RCTs operate as a technology of disentanglement. Its promise is to accurately quantify the impact of anti-poverty interventions, by disentangling one particular causal relation (between the treatment and the outcomes of interest) from others (between any other event and the outcomes of interest). RCTs promise unbiasedness; fragmentation and disentanglement are processes through which unbiasedness is achieved.

2.2. Some issues with unbiasedness

2.2.1. Unbiasedness, an argumentative Swiss knife

The preponderance that RCT proponents attribute to unbiasedness is not consensual among economists. Angus Deaton[40], a prominent RCT-skeptic, argues in an interview that there is no compelling reason to prefer unbiasedness over other statistical qualities, in particular, precision:

> "So a lexicographic preference for randomized control trials – the 'gold standard' argument – is sort of like saying we'll elevate unbiasedness over all other statistical considerations. Which you're taught in your first statistics course not to do. [...] We often find a randomized control trial with only a handful of observations in each arm and with enormous standard errors. But that's preferred to a potentially biased study that uses 100 million observations. That just makes no sense" (Ogden, 2017: 40).

Deaton underlines that RCT often operates on relatively small samples, which considerably decreases the precision of the results. While RCT proponents clearly favor unbiasedness over precision, Deaton argues that there is a trade-off between those two statistical qualities:

[40] Angus Deaton is a Nobel-awarded economist. He is one of the most prominent and vocal critics of RCT. He authored (and co-authored with philosopher Nancy Cartwright) several articles dedicated to warn against the shortcomings of RCT. He coined the term "randomista", now commonly used to describe RCT proponents and their epistemic and affective commitment to their methodology. His criticism is mostly based on epistemological and methodological arguments (as opposed to criticisms focused on what RCT does to international development and poverty-action).

> "Unbiasedness means being right on average, where the average is taken over an infinite number of repetitions using the same set of subjects in the trial, but with no limits on how far any one estimate is from the truth, while precision means being close to the truth on average; an estimator that is far from the truth in one direction half of the time and equally far from the truth in the other direction half of the time is unbiased, but it is imprecise." (Deaton and Cartwright, 2018, p. 3)

To make this more intuitive, statistics teachers have used the image of the disposition of bullet impacts on a shooting target, that I reproduce below (fig. 1). Grouped bullet impacts (squares 1 and 3) figure a narrow distribution of impact estimates around the mean. Dispersed bullet impacts (squares 2 and 4) figure a wide distribution of impact estimates around the mean. In squares 1 and 2, the group of bullet impacts is not centered on the target. The distance between the center of the target and the barycenter of the group of bullet impacts figures the bias: it represents the fact that the estimated average impact is distant from the "true" average impact. On the contrary, in squares 3 and 4, the bullet impacts are centered (tightly or loosely) on the target, which means that the estimated average impact is very close to the "true" mean impact.

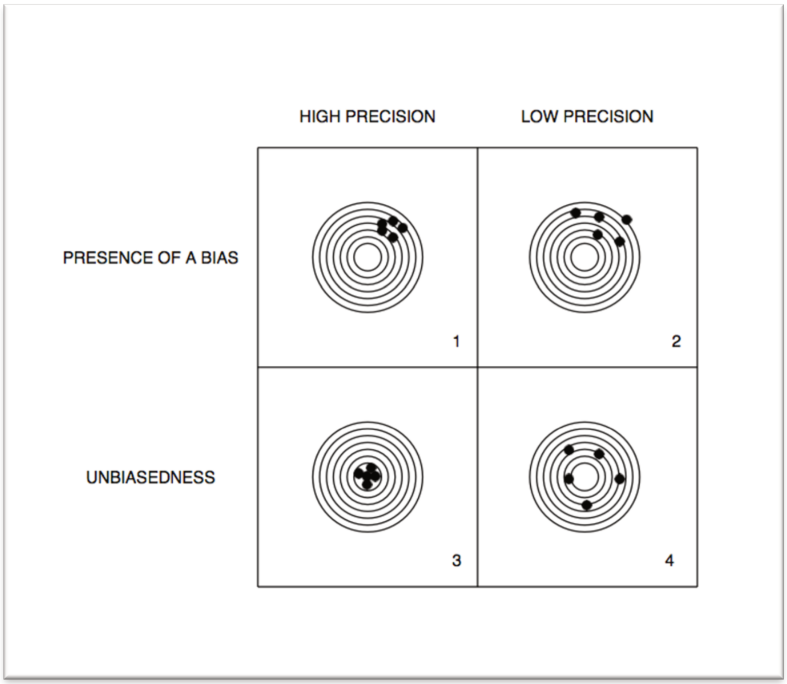

Figure 1: Unbiasedness vs precision. Source: author's creation, after numerous examples from online educational material (statistics courses).

RCT proponents have not only stressed unbiasedness as a desirable statistical quality, but they have used it as an argumentative Swiss knife, by presenting it as a breakthrough in several domains. It is cherished not only as an epistemic ideal, for it produces estimates that are

supposedly better, but also as a tool for policy-guidance. Indeed, the motivation for quantifying unbiased impacts lies in the ambition to compare and rank different anti-poverty interventions. RCT is a donor-oriented methodology and responds to a logic of accountability (Bernard, Delarue and Naudet, 2012). It is less important to elicit the causal mechanism than to correctly attribute impact (i.e., to understand whether and to which extent the observed outcomes are indeed imputable to the intervention). It is important for RCT proponents that each intervention is credited exactly with the impact it caused.

But the term "bias" is polysemic, and the RCT proponents play on its ambiguities. In the context of RCTs, unbiasedness refers to the absence of statistical bias. However, frequent semantic shifts in the written production of the RCT proponents imply that statistical unbiasedness may also be conducive of other types of unbiasedness. In these different meanings, unbiasedness refers to the absence of different types of bias, that no longer apply to estimates, but to people or institutions. Here are a few occurrences of other than statistical uses of the term bias, among many. In the first two examples, bias is described as something that affects the policy-recipients (parents, voters).

> "When thinking about an immunization policy, should policy makers assume that parents understand the full costs and benefits of immunization and rationally internalize them, or assume they may be ill informed and/or **present biased**?" (Duflo, 2017, p. 2)[41]

In this example, Duflo suggests that the poor suffer from a cognitive bias: they are short-sighted and tend to procrastinate, because they have a strong preference for the present and disregard future rewards – a shortcoming which the poor are often suspected of in the new development economics literature. The cognitive bias hampering the poor's capacity to make the right decision (making sure their children get immunization shots), decision-makers are encouraged to resort to behavioral nudges when designing policies.

> "The study also used another measure of **implicit bias toward women**, inspired by political scientists. The respondents listen to a speech, supposedly given by a village leader, delivered by either a male or female voice, and are asked to give their opinion of it." (Banerjee & Duflo, 2009, pp. 158–159)

Here, bias is the expression of a sexist prejudice amongst Indian voters. It not only causes people to make a mistake when analyzing political discourse – by assessing a same speech differently according to the gender of the person who pronounces it – but it is also a moral flaw,

[41] All the emphases (bold characters) are mine.

leading to discrimination. The experiment described by Banerjee and Duflo aims at measuring the impact of gender quotas (for village leader positions) on discrimination against women.

In the next two examples, bias is no longer something affecting the poor, but the policy-makers or policy-making institutions. They are described as holding certain uninformed beliefs regarding poverty-alleviation, or suffering from organizational dysfunctions.

> "The **bias against just giving people money** stems in part from the **feeling** that the best use of the money may not be to spend it on consumption." (Banerjee and He, 2008, p. 47)

In this sentence, bias refers to a commonly held (but, the authors imply, uninformed by evidence) opinion that direct cash transfers to the poor are inefficient, because the recipients might spend money on consumption goods rather than invest it in a lucrative activity. The term bias describes here the influence of ideological or political beliefs on one's worldview.

> "This institutional setup has resulted in **a strong bias toward 'always' disbursing committed funds** to the ex-ante designated recipient or project, regardless of the recipient government's performance or project performance and the conditions in other potential aid recipient countries (projects). […] **The bias arises because the opportunity cost** of a given aid budget (or a committed adjustment loan) for the disbursing donor agent is low." (Svensson, 2006, p. 320)

In that case, J-PAL affiliate Jakob Svensson comments on the fact that aid agencies often commit funds to a project right from its inception, putting little pressure on aid recipients to deliver. Bias describes a routine practice shaped by institutional constraints and leading to inefficiencies. Let us note that this non-economic use of the term bias is completely entangled in economic vocabulary (e.g. "opportunity cost") and reasoning (principal-agent theory[42]).

> "[T]he teacher **clearly wanted to make a good impression**: his idea was to draw an enormously complex figure on the board […] accompanied by a long lecture about the diagram. All the children […] sat very quietly. Some might have been trying to draw a simulacrum of the figure on their tiny slates, but the quality of the chalk was so low that it was impossible to tell. It was clear that none of them had a clue what was going on. This teacher was not an exception. We have seen countless examples of this kind of **elite bias** among teachers in developing countries." (Banerjee and Duflo, 2011, p. 148)

In this last example, bias describes an attitude, a maladjustment between a teacher's ambitions (teaching complicated geometry) and his pupils' abilities, because the teacher holds on to a

[42] This theory deals with the problems that may arise when an entity (the agent) acts or makes decisions on behalf of another entity (the principal).

certain idea of his profession and social status. RCT's promise seems to go beyond statistical unbiasedness; through statistical unbiasedness, RCT could achieve a decrease in various kinds of human errors, be it in individual choices or policy-making.

2.2.2. A trade-off between unbiasedness and representativeness

Finally, I would like to question unbiasedness in the light of how the economists construct their experimental sites, and how these experimental sites relate to the rest of the world. A first way of posing the problem is to ask how various experimental sites or laboratories in the world relate to each other. Sociologist of sciences Thomas F. Gieryn investigated the concept of "place" in sociology, and particularly in sociology of sciences (Gieryn, 2000). How does knowledge produced in a particular place, he asks, becomes deemed true outside of this particular place? The author explains that early experimental accounts[43], contained many details about the instrumentation and the experimental setting, details that are nowadays largely black-boxed because of the high degree of standardization. Visiting a building hosting biology laboratories in Princeton University, and looking into the history of its architecture, Gieryn explains that such buildings are highly standardized from one prestigious US University to the other,

> "and because of that, scientists all over can make the reasonable assumption that conditions of knowledge-production—material, social, and cultural—are equivalent to what they have under their own feet. […] Scientists trust the claims from other laboratories as they would their own 'home-truths' because they can safely assume that whatever environmental factors are left out of a scientific paper from over there are essentially the same as the environmental factors they leave out of their own papers." (Gieryn, 2002, p. 127)

Experimental field sites on which RCTs are implemented are not laboratories; they do not filter factors out as laboratories do. Rather they *control for* external factors, using a counterfactual, and they enable a selective collect of data, that are brought to centers of calculations to be analyzed[44]. Furthermore, the question I wish to ask is not the question of the degree of standardization of the labification processes carried out in various RCTs across the world. Rather, I am asking: how does the field site relate to the world around? How is it constructed as being relevant for the larger world? In *The Pasteurization of France*, Bruno Latour argues

[43] Such as the accounts of Robert Boyle's experiments with the air-pump in the late 17th c., thoroughly described in Shapin and Schaffer's *Levianthan and the Air Pump* (1985).

[44] I describe the labification of the villages in details in the next chapter, drawing on Latour's account of a scientific expedition in the Brazilian rainforest (Latour, 1993a).

that one of the keys of Pasteur's success was his ability to convincingly translate and transpose the problems of his contemporaries in his laboratory:

> "All the great macroscopic problems of hygiene, it was believed, had been found to be solvable by the Pasteurians on the small scale of the laboratory: the same went for the main disinfectants, the safety of the Paris drains, the harmlessness of the sewage farm at Gennevilliers, problems of quarantine. In each case, **thanks to this identification of the macro- and microcosm**, Pasteur's laboratory was expected to provide the final opinion that would settle the matter." (Latour, 1993b, p. 67)

Pasteur, according to Latour, managed to produce a miniature world, that satisfyingly represented the larger world. What RCT accomplishes is very different: field sites are not microcosms. Let us keep in mind that in RCT, randomization ensures that within the sample, treatment and control groups are representative of each other and of the whole sample. But RCT does not offer any identification relation between the sample and the rest of the world. The experimental sample is only representative of itself. It is not even representative of the population of the geographical area where it takes place: I explained earlier in this chapter that the villages included in the sample are cherry-picked beforehand to limit attrition. RCT does not operate in a microcosm or a miniature world, that represent a larger world, it cuts a small fragment of the world, one small piece in a puzzle. This fragmentation is geographic, demographic, and analytic. An RCT takes place on a limited geographic area[45]; it concerns only a specific portion of the population; and it offers a fragmentary problematization of poverty.

In the precedent subsection, I showed that RCT's top position in the hierarchy of impact evaluation methods is debatable and debated. But even if we were to admit that RCT represents a breakthrough, it is important to remember that this breakthrough only concerns internal validity (meaning, the reliability of the causal identification), and not at all external validity (meaning the extent to which the experimental results hold true outside of the experiment).

> "If identification and causality are debates about 'internal validity', then generalization and extrapolation are concerns about 'external validity'. It surely matters for the latter that we first have a good handle on the former, but even the cleanest estimation of a given project's impact does not axiomatically provide warrant for confidently inferring that similar results can be expected if that project is scaled-up or replicated elsewhere." (Woolcock, 2013, p. 230)

[45] There are a few exceptions where an experiment is conducted simultaneously on several geographic zones. Actually, even the Kianga Energy Research Project is an exception to this regard: it is conducted on two separate and non-contiguous districts.

My point is not to blame the RCT proponents for this problem, which is frequent in social sciences and in experimentation in general. But they tend to ignore the issue altogether – this is one of the weakest spots of the methodology – and to claim that it is solved through the replication of successful experiments in different contexts. But two questions arise, that have remained unanswered so far. First, how many replications does one need before an intervention can be deemed successful in general? One, two, ten… a hundred?[46] Second, how does one define a different context? Does that mean another region, another country, another continent, another language, another political system, or another climate? What exactly forms the context of an experiment[47]? RCT proponents overlook the problem. They create policy briefs, and build a repository of best practices as if they had overcome external validity issues.

2.3. Is RCT rendering other methods obsolete?

The RCT proponents have simultaneously managed to make RCT incredibly popular and to crystallize much discontent amongst colleagues (fellow economists advocating for maintaining the diversity of impact evaluation methodologies, social scientists specialized in development). This double tour-de-force stems from the way the RCT proponents have presented other impact evaluation methods as second-best choices. Other impact evaluation methods have been described as obsolete, on the grounds that they fail to produce unbiased estimates. In the following pages, I heavily quote a book chapter by Esther Duflo and Michael Kremer, two prominent figures of the RCT movement – even more so now they have received the Nobel Prize (Duflo and Kremer, 2008). This chapter is published in *Reinventing Foreign Aid*, a book edited by William Easterly (Easterly, 2008). In this book, Easterly berates the "planners" who dream of ambitious international development projects, financed by large volumes of foreign aid. He calls for an international development strategy led by "searchers", who seek solutions that can "alleviate poverty and can be scaled up with the limits of politically feasible aid budgets" (Easterly, 2008, p. 23). Duflo and Kremer's chapter deals with impact evaluation methodology.

> "[R]andomized evaluations are not the only methodologies that can be used to obtain credible impact evaluations of program effects. Researchers have developed alternative techniques to control for bias as much as possible, and progress has been made […] Identification [of causality] issues with nonrandomized evaluation methods

[46] This pertains to the question of inductive reasoning, a classical problem in philosophy of science.

[47] Anthropologist Fiona Gedeon Achi dedicated one chapter of her doctoral dissertation to this very question (Gedeon Achi, 2019).

> must be tackled with extreme care because they are less transparent and more subject to divergence of opinion than are issues with randomized evaluations. Moreover, the differences between good and bad nonrandomized evaluations are difficult to communicate, especially to policymakers, because of all the caveats that must accompany the results. In practice, these caveats may never be provided to policymakers, and even if they are provided, they may be ignored. In either case, policymakers are likely to be radically misled. This suggests that while nonrandomized evaluations will continue to be needed, there should be a commitment to conduct randomized evaluations where possible." (Duflo and Kremer, 2008, p. 98)

In this rather intricate and awkward paragraph, Duflo and Kremer warn against three impact evaluation methods other than RCT. I have explained why the RCT proponents consider statistical matching and impact evaluation methods resorting to a counterfactual other than a randomly selected control group imperfect: these "quasi-experimental" methods can only use a limited number of observable variables to ensure that the treatment and the control groups are comparable. Age, gender and income may have similar distributions in both groups, but, the RCT proponents argue, groups may differ with regards to unobserved or unobservable variables, leading to a selection bias.

Later in their above-quoted book chapter, Duflo and Kremer mention a third method: the regression discontinuity design. This method can be used when access to a program is conditioned on an arbitrary threshold (the "discontinuity"). For instance, when eligibility to a program is determined by the income level, people just above and just below the income threshold are likely to form two similar, comparable groups; but only one of these groups will receive the program. In such cases, people whose income is just above the threshold form a suitable control group. The authors acknowledge that regression discontinuity design can deliver unbiased results:

> "Such discontinuities in program rules, when enforced, are thus sources of identification [of causality]. In developing countries, however, it is often likely to be the case that rules are not enforced strictly enough to generate discontinuities that can be used for identification purposes." (Duflo and Kremer, 2008, p. 97)

The authors take the example of the Grameen bank, the well-known micro-credit institution, whose official policy is to lend only to people possessing less than one acre of land. They argue that the Grameen actually makes many exceptions and also lends to people owning larger pieces of land: the one-acre discontinuity threshold is thus not exploitable by researchers.

This book chapter by Duflo and Kremer is interesting because it displays two successive argumentative shifts in the claim that RCT is the gold standard impact evaluation method. First,

the authors disqualify "traditional" methodologies on the ground that they cannot guarantee unbiased results. In a second movement, they explain that two quasi-experimental methods can be "good or bad", but that it is too difficult to communicate the methodological subtleties to policy-makers. In a third movement, they acknowledge that at least one quasi-experimental method (regression in discontinuity design) can deliver unbiasedness, but they add that the method cannot be trusted in developing countries, where organizations tend to disregard formal rules. The argument travels from (1) methodological grounds, to (2) policy-relevance concerns, and finally, reaches the point of (3) criticizing governance of developing countries' potential partners. The first point is hotly debated[48]. The last two caveats they express (policy-makers cannot distinguish between good and bad studies and developing countries are messy places) ironically, are very relevant when it comes to RCT. But how is it any less difficult to convey the difference between a good and a bad RCT than the difference between a good and a bad matching design to policy-makers? Finally, RCTs are also subject to implementation issues related to the impossibility to perfectly control everything on the experimental field sites (especially the participants' and partners' behavior and compliance)[49]. Martin Ravallion, a former Chief economist at the World Bank, challenges the methodological superiority of RCTs to this regard:

> "Moreover, when we look at RCTs in practice, we see them confronting problems of miss-measurement, selective compliance and contamination. Then it becomes clear that the tool cannot address the questions we ask about poverty, and policies for fighting it, without making the same type of assumptions found in observational studies—assumptions that the randomistas promised to avoid." (Ravallion, 2019, p. 23)

Overall, the claim that RCTs sit at the top of the hierarchy of evidence does not resist a careful examination. However, RCT make a strong (although very debatable) proposition as to how address poverty. RCTs decipher small fragments of the world as epistemic spaces of poverty. Within each experimental sample, random selection supposedly ensures that the treatment and control groups are representative of each other. But the experimental sample is not constructed

[48] Comprehensively mapping the epistemological and methodological controversies about RCT is a fascinating and necessary endeavor, in which I have not engaged in this dissertation, for the reasons explained in the general introduction. I chose to focus on RCT "and its world" rather than to further engage in discussions about the scientific validity of the impact evaluation methodology. Development economist and former World Bank's Chief Economist Martin Ravallion provides an illuminating summary of the debates in a working paper entitled "Should the randomistas (continue to) rule?" (Ravallion, 2019).

[49] Examples can be found in the literature criticizing (Bédécarrats et al., 2019 ; Faulkner, 2014 ; Quentin and Guérin, 2013), and some are even recounted in the present dissertation – see chapter 4.

to be representative of a larger population. The choice of the experimental site and the construction of the experimental sample depend on material constraints and logistical possibilities, on the partnerships that the researchers were able to create, etc. In other words, an experimental site is not a miniature world, it is just a small, non-random fragment of it.

To conclude this section and move onto the next, I would like to discuss the enterprise of rendering poverty-action more scientific by resorting to experiments in order to enable single cause identification. RCT relies on a concept of causation based on "difference-making" rather than "production" (Shaffer, 2015). In the "difference-making" causation paradigm, causality means not only that a given cause produces a given effect, but also that this effect would not have been produced otherwise: the notion of counterfactual plays a central role. In the "production" causation paradigm, causality means that the mechanism through which a given cause produces a given effect has been identified. Development scholar Paul Shaffer links each causation paradigm with a different approach to poverty. Difference-making causation tends to be associated with visions of poverty understood as the result of specific lacks or deficits to be remedied, whereas production causation paradigms correspond to visions of poverty understood as the result of a complex interplay of social relations. To that extent, RCTs are the archetype of the difference-making causation approach: it precisely aims at disentangling one factor from all the others, getting around the complexity of social life. Finally, the exclusive reliance on difference-making necessarily operates a selection amongst the various possible causes of poverty that RCTs can exhibit. As a consequence, RCTs have the effect of shining the light on a restricted, contained causal space. This is the issue addressed in the next section.

Section 3. Micropolitics: restricting the causal space of poverty

RCTs contain the causes of poverty within epistemic fragments of the world. This restriction of the causal space of poverty is the epistemic equivalent of social and political exclusion. RCTs come in the wake of a historically growing scientific interest for the poor and their way of life in poverty-reduction policy-making. The microeconomic foundations of RCTs further stress this focus on individual actions and choices. In the end of this section, I discuss the use and the political relevance of an experimental method to address a historical phenomenon such as poverty.

3.1. Poverty knowledge in the US: scrutinizing the poor?

Is the use of RCT in global poverty action an American undertaking? I will not venture to provide a definitive answer to that question. Let us simply note that the organizations conducting most of the RCTs worldwide are US-based (the J-PAL, Innovations for Poverty Action, the World Bank). Moreover, economics is a highly internationalized discipline, organized according to Western standards and taught with pedagogical material published in the US (Fourcade, 2006). This is all the truer of the new development microeconomics and of RCT: through the interlacing of affiliations, researchers form a worldwide tight-knit epistemic community behind the scientific and managerial leadership of the United-States branch of the J-PAL (Jatteau, 2018). Finally, most of the private foundations donating to the J-PAL are based in the USA. In any case, it seems useful to make a brief detour through the history of poverty knowledge production in the USA to understand what is at stake with RCTs.

Historian Alice O'Connor studies a century of poverty knowledge production in the USA, from the Progressive Era (at the turn of the 19th and 20th centuries) to the Clinton presidency, until 2001 (O'Connor, 2002). The author explains that the American failure to produce efficient poverty-reduction policies does not come from a reluctance of policy-makers to follow the scientists' recommendations. She argues that a century of failure to combat poverty in the US, on the contrary, comes from poverty knowledge itself. It has not proposed systemic changes, but only slight adjustments and social engineering initiatives, on the margin of a system that is almost never questioned.

> "The idea that scientific knowledge holds the key to solving social problems has long been an article of faith in American liberalism. Nowhere is this more apparent than when it comes to solving the 'poverty problem.' For well over a century, liberal social investigators have scrutinized poor people in the hopes of creating a knowledge base for informed social action. […] And yet, poverty remains a fact of life for millions in the world's most prosperous economy, stubbornly resistant to all that social scientists have learned about its 'causes, consequences, and cures.'" (O'Connor, 2002, p. 3)

O'Connor describes four trends that shaped poverty knowledge across the 20th century. The first one is a quick eviction of political economy analyses from the study of poverty. During the Progressive Era, the social surveys movement conducted empirical research, geared at guiding political reform (rather than charity works). They blamed low wages, unemployment and racial discrimination as the main causes of poverty. But soon, such factors were disregarded, to the benefit of cultural explanations. Poverty was described as a social pathology affecting Black communities, or as a difficulty experienced by immigrant communities,

temporarily disorganized upon arrival in inner-city neighborhoods from their villages in Europe. The latter statement comes from Chicago-school urban ecology, that greatly contributed, according to O'Connor, to shift the debate on poverty from structural causes to cultural and psychosocial causes. The Chicago-school, less interested in guiding political reforms than in renewing social theory, naturalized poverty as a transitory ailment that spontaneously cures itself as immigrants Americanize. The second trend highlighted by O'Connor is the emphasis put on individual behaviors and personal failings, such as laziness, addiction or single-motherhood. Cultural analysis moved from studying community dynamics to assessing individual adequacy and skills. Thirdly, since the 1980s, the fight against poverty has been more and more reconfigured in terms of fight against "welfare dependency." Social benefits supposedly maintain people in poverty, and disincentivize them to find work. Policies of individual "activation" and workfare schemes appeared. Fourth, there was a shift in methodologies, starting in the 1970s: poverty research has increasingly consisted in quantitative studies (such as cost-benefit analyses) and econometric studies. According to O'Connor, research stopped guiding policy-making and started to accompany the political agenda, as a depoliticized technical support.

> "[T]he technical jargon of recent decades has taken poverty knowledge to a level of abstraction and exclusivity that it had not known before. It is a language laced with acronyms that themselves speak of particular data sets, policies, and analytic techniques […]. It also speaks of a self-contained system of reasoning that is largely devoid of political or historical context, in which individuals are the units of analysis and markets the principal arbiters of human exchange." (O'Connor, 2002, p. 15)

In addition to demonstrating that poverty knowledge has failed to adequately guide poverty-reduction policies in the US, O'Connor questions its role in worsening the problem. Poverty knowledge in the US largely validated the institutional model combining liberal democracy and free-market capitalism. One of the most valuable insights of O'Connor's work is to remind us that the equation between "producing poverty-knowledge" and "producing knowledge on the poor" is all but an obvious analytic move. Focusing the inquiry only on the poor excludes at one all the systemic analyses and the problematizations of poverty rooted in political economy. Even further, it operates as a comforting statement addressed to the non-poor, reasserting to them that they are not part of the problem.

> "On the whole, though, poverty knowledge has been perhaps most effective as a form of cultural affirmation: a powerful reassurance that poverty occurs outside or in spite of core American values and practices, whether those are defined in terms of capitalist

> markets, political democracy, self-reliance, and/ or a two-parent, white, middle-class family ideal"(O'Connor, 2002, p. 15)

Scrutinizing the poor and their way of life to explain a complex social phenomenon as poverty contributes to interpret poverty as an anomaly persisting on the margin of a well-functioning system, rather than resulting from it.

In a contribution entitled "What Kind of a Problem Is Poverty? The Archeology of an Idea", historian Michael B. Katz engages in a pursuit similar to O'Connor's: he surveys and discusses the literature about poverty in the USA (Katz, 2015). His work more specifically revolves around the question of the causes of poverty, as they have been historically described and analyzed. He identifies six main themes. Poverty has been analyzed as a problem of persons, places (degraded neighborhoods), resources, political economy, power (lack thereof) or markets. Katz first describes the analyses considering that poverty is a problem of persons (meaning individual shortcomings or, in the hardest versions, hereditary limitations). He explains that there has long been a dichotomy between deserving and undeserving poor, at least since the Elizabethan Poor Laws in the late 17th c. England (distinguishing between able-bodied vs. impotent poor). In the US, vagrants, drunks, or unemployed men, Mexican immigrants, African-American single mothers on welfare or undocumented immigrants have been successively presented as the public figures of the undeserving poor. Such distinctions, according to Katz, present the political usefulness of circumscribing populations to potentially exclude from public assistance or welfare. Children, on the contrary, have been regarded as the epitome of the deserving poor. Combining the views that poverty is rooted in individual failure and that children are innocent and deserve to be helped, one easily understands why so much hope has been placed on education programs to help people out of poverty.

Katz deplores that poverty is hardly considered a problem of resources. The idea of cash transfer has never gained much traction, be it academic or political – probably in relation with the very influential view that poverty is a problem of persons. How to trust the poor to make a good use of their money?[50] Poverty has long been understood as a problem of place, from the social workers denouncing the squalor of tenement houses during the Progressive era, to the contemporary concerns about decaying and unsafe inner-city neighborhoods. The analyses of

[50] Since the late 1990s, conditional cash transfers, such as the well-known Mexican Prospera (formerly Progresa, then Oportunidades) program, described in chapter 3 of this dissertation, have been regarded as a possible response to this doubt. Eligible families receive benefits provided they comply with some requirements, especially concerning school-age children. More recently, it seems that the idea of unconditional cash transfers as a response to extreme poverty is gaining traction, with the work of organizations like GiveDirectly (https://www.givedirectly.org/about/).

poverty in terms of political economy can be summarized (in a somewhat caricatural way, Katz admits) in two competing families of explanations. Conservative analysts will blame excessive social welfare, that corrupts people and makes them unable to fend for themselves, whereas left-wing intellectuals will blame the social violence of a free-market economy and capitalist exploitation. The analyses of poverty as a problem of powerlessness are rooted in a critical view of the American democracy: the poor are unlikely to benefit from their participation in electoral politics, and politicians normally do not look after the interests of the poorest unless they are pressured to do it by protests. Lastly, Katz tackles the analyses of poverty focusing on the role of markets: these are more recent problematizations of poverty (from the 1980s onwards), based on the double premises that (1) people are poor because they are excluded from markets, and especially lack financial services; and that (2) services are best delivered through market-based mechanisms rather than governmental action. Finally, Katz regrets that the analyses stressing the role of persons, places and markets occupy much of the intellectual and political space, to the detriment of analyses in terms of resources, political economy and power.

> "Market-based technologies of poverty […] propose to solve poverty on the cheap, with relatively little public money, and without growing the size of government very much. They reduce the role of government to impresario organizing, partially funding, and coordinating a new show rather than creating and managing new programs. That said, these initiatives have the potential to improve the lives of a great many people while smoothing the rough edges of capitalism. Is this the best we can hope for? […] The new market-based antipoverty technologies provide a way of eliding these topics—resources, political economy, power—and refocusing attention elsewhere, usefully, for sure, but not with anything like the force needed to confront the massive and growing economic deprivation in twenty-first-century America." (Katz, 2015, pp. 69–70)

Michael Katz's conclusion is bittersweet, and resonates with the tone of anthropologists who study the market-based provision of goods and services in poor countries (Collier et al., 2017 ; Redfield, 2012 ; Roy, 2012a)[51]. One the one hand, these authors acknowledge that market-based approaches to poverty are better than absolute neglect, and represent a form of care after all. On the other hand, they insist on the limited impact of such market-based projects, that merely aim at delivering small improvements in the domestic lives of the poor.

O'Connor and Katz demonstrate how poverty knowledge narrowed down to the study of a specific population (the poor). They both show that there were less and less attempts at understanding the structural obstacles faced by the poorest segments of society, and their place

[51] This literature is surveyed in Chapter 5.

within society at large; and more and more attempts at seeking the causes of poverty within people themselves, or in their immediate environment.

RCT seems to inherit from these traditions of poverty knowledge, to the extent that it is very often conducted on the poor themselves, or on people that directly interact with them[52]. In the next subsection, I analyze more straightforward influences (microeconomics, behavioral and experimental economics), that also have the effect of restraining the space of causes of poverty.

3.2. Microeconomics-inspired politics?

3.2.1. Machiavellian micropolitics

A specific use of the notion of micropolitics (that does not claim any filiation with Foucault, Deleuze or Guattari) appears in an essay by a British economist and free-market advocate[53], entitled *Micropolitics* (Pirie, 1988). Political philosopher Grégoire Chamayou dedicates the last chapter of his book *La société ingouvernable* to Pirie's essay (Chamayou, 2018, pp. 248–262). In Pirie's work, micropolitics is not an analytic concept used to describe a phenomenon. It refers to a political strategy, or as Chamayou writes, a "political art" or "political technology." Pirie proposes a roadmap to cut public spending and expand the private sector at the expense of government-provided services. He argues that trying to convince citizens that privatization is a good choice for society is inefficient, because people are not willing to give up the benefits they enjoy from public services and social security. According to Pirie, it is more efficient to alter the circumstances in which people find themselves, so as to create a multiplicity of situations in which their individual choices will gradually lead to the desired result, without them realizing what is happening. There are several interesting steps in Pirie's argument. First, there is an explicit analogy between micropolitics and microeconomics:

[52] In particular, civil servants supposed to provide the poor with education or health services (teachers and nurses) have been at the center of several experiments, especially in India. On a side note, J-PAL India has conducted several RCTs on civil servants, often to monitor their attendance or to test their replacement with contract workers with lower wages. See for instance an experiment in which teachers receive financial sanctions for absenteeism: https://www.povertyactionlab.org/evaluation/encouraging-teacher-attendance-through-monitoring-cameras-rural-udaipur-india.

[53] Madsen Pirie is the president and a founding member of the Adam Smith Institute, a think tank that self-describes as follows: "Independent, non-profit and non-partisan, we work to promote free market, neoliberal ideas through research, publishing, media outreach, and education. […] In its early days, the Institute was known for its pioneering work on privatization, deregulation, and tax reform, and for its advocacy of internal markets in healthcare and education. Today, it is known as one of Britain's leading think tanks, and for its emphasis on using free markets to end poverty." (https://www.adamsmith.org)

> "The suggestion is that there is a 'micropolitics' just as there is a microeconomics. Microeconomics considers the behaviour of individuals and groups in economic markets; micropolitics looks at it in political markets. Moreover, just as microeconomics is closer to the level where decisions and actions are taken in the economic markets, and is thus closer to real events, the same is true of micropolitics in political markets." (Pirie, 1988, p. 75)

The analogy holds on two (closely related) elements. First, micropolitics, as microeconomics, focuses on individual behaviors. Second, micropolitics mimics microeconomics in dealing with what Pirie names "political markets." The idea that there is such a thing as political markets comes from public choice theory (quoted in Pirie's essay), that creates economics models to predict the choices of self-interested voters, politicians and bureaucrats on the markets for public policies (Buchanan and Tullock, 2008 [1962]). According to that theory[54], individuals will not vote for politicians promoting privatization and cuts in public spending if they stand to lose from it. Pirie suggests to resort to craftiness: instead of overtly campaigning for privatization, one should modify the circumstances in which people find themselves so as to nudge them to make different choices.

> "Not only is it less confrontational than conventional policy, it is less holistic. It does not seek to implement the vision of a market economy right across the board in the shortest possible time. Rather does it seek to find policies here and there which can make inroads. It seeks to create a situation in which state benefits and transfers are gradually traded off for things which are perceived to offer greater value. In place of the broad sweeps it offers the fine detail. It involves close study of each situation, and the formulation of policy designed to achieve success in that area. It is thus more piecemeal and more gradual." (Pirie, 1988, p. 76)

This vision of politics based on social engineering shares some common points with RCT. I am not arguing that RCT proponents share the same political objectives as Pirie, but they do promote piecemeal and gradual policy-making, that is also based on trying to modify people's preferences unbeknownst to them.

3.2.2. An economic efficiency-driven approach

One of the reasons why it is so important to RCT proponents to estimate unbiased impacts is that impact is then used in a further calculation: the cost-effectiveness ratio of the intervention under evaluation. The impact, quantified in proportion ("outcome increased by x%") or

[54] James Buchanan was awarded the Nobel memorial prize in economics in 1986 (two years before Pirie published his essay) for the public choice theory.

sometimes in standard deviation[55] of the sample ("outcome increased by x% of a standard deviation"), is divided by the cost of the intervention. The larger the impact, the larger the cost-effectiveness ratio. Conversely, the smaller the cost of the intervention, the larger the cost-effectiveness ratio. This means that, when two interventions addressing the same issue are found to produce a positive impact, they are not ranked only according to the magnitude of their impact, but also to their cost. Here is a telling example of what this entails. In its early days the J-PAL conducted several experiments addressing school absenteeism, in various countries (Afghanistan, Kenya, Mexico, etc.). Some interventions consisted in transferring cash to families with or without conditions, other interventions in building a school, distributing free uniforms, menstrual cup or scholarships. One of them consisted in giving one tablet of albendazole, a deworming drug, to all the pupils of a school (without screening those who are actually infected from the others); the underlying assumption being that children skip school because they suffer from parasitic infections[56]. This intervention has a particularly low cost. The albendazole itself is extremely inexpensive, and as the children are not screened, there is no need to send medical staff: the schoolteachers are trained to administer the drug. Moreover, the economists who evaluated the deworming interventions argued that children who were not dewormed but who lived in the same vicinity as the children who got the albendazole also benefitted from the intervention (Miguel and Kremer, 2004). These non-treated children, the authors of the study argued, were less likely to be contaminated because the treatment reduced the infection rate around them. This is an archetypal case of positive spillovers, the epitome of economic efficiency: even children on whom no money was spent at all somehow benefit from the intervention. This further contributes to a high cost-effectiveness ratio.

[55] The standard deviation of a sample is a statistical description of a sample's dispersion around the mean.

[56] The deworming experiment and its aftermaths have given rise to many comments (Abdelghafour, 2017 ; Allen and Parker, 2016 ; Gedeon Achi, 2019).

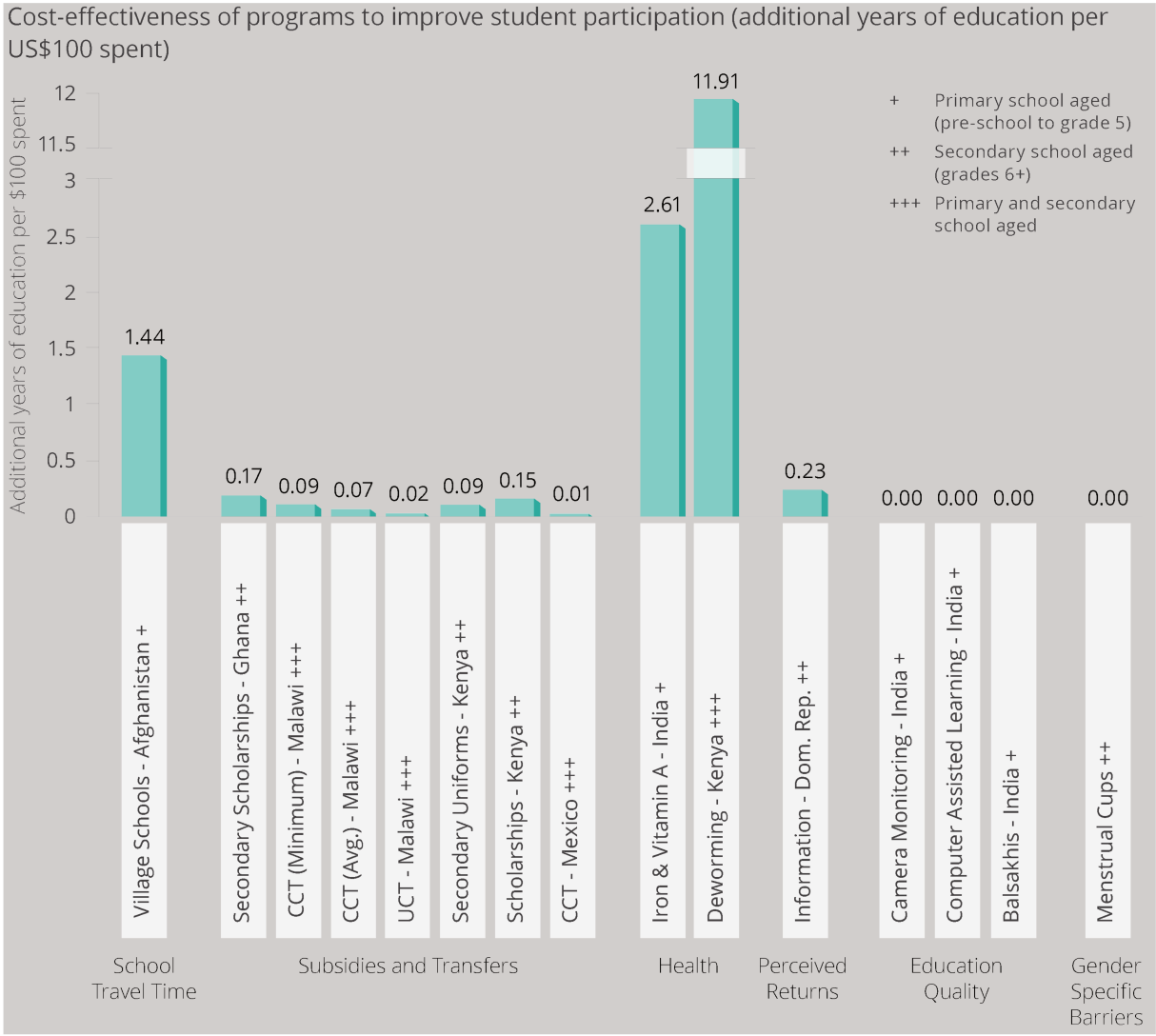

Figure 2: Comparison of interventions aimed at improving students' participation. Source: www.povertyactionlab.org

The above diagram (fig. 2) represents the cost-effectiveness ratios of these variegated interventions aimed at improving students' attendance. The deworming intervention is far more cost-effective than all the other interventions – note that the scale jumps from 3 to 11.5 to fit the bar representing its cost-effectiveness ratio; otherwise the diagram would have been even more visually striking. Note also that the cost-effectiveness ratios are expressed in a surprising metric: each bar represent the number of additional years of school for $100 spent. Deworming adds almost twelve years of education for $100, this seems huge. But there is no way to know how many children benefitted from the intervention, or the average additional schooling time per child. The diagram does not indicate if these 11.91 years concern ten children benefitting from 1.191 more years of schooling each on average, or 1,000 children benefitting from 0.01191 additional years of schooling. Indeed, this kind of visuals is elaborated to guide

philanthropists and institutional donors towards the interventions that maximize the impact of their donations. It places the viewer in the position of someone with $100 to give but who does not know which initiative to support. Such analyses give a clear advantage to inexpensive policies. Building a school in a village where there is none is likely to benefit relatively few children, but in a meaningful way – maybe enabling some of them to go to school at all. Deworming, on the other hand, is about preventing children already enrolled in school to skip school when feeling sick. For many reasons, the various interventions compared in the diagram are not commensurable; they do not even tackle the exact same issue. But cost-effectiveness analysis affords a unidimensional ranking, that unambiguously points towards the most economically efficient intervention.

3.3. Experimenting: another anti-politics machine?

Experimenting on the poor to solve global poverty is neither intuitive nor obvious. Historically, the experimental method was developed to explain natural phenomena, with a hypothetico-deductive reasoning. The hypothesis is defined jointly by the economists and the implementing partners, who closely cooperate to co-organize the experiment, but the recipients are not given an active part in this process. The experiment defines a "geography of competences" (Akrich, 1991) that denies the recipients the reflexivity attributed to the other parties. The poor are given the passive role of the phenomenon to elucidate: they are expected to behave just as usual – they would not even need to know that there is an experiment going on to play their part in it. They are not associated to the reflection: they are expected to provide data, not insights. Experimenting disqualifies the poor as political subjects.

What does it mean to use an experimental method for studying a historical phenomenon, such as poverty? First, experiments define a restricted space of causes: nothing outside of the field site will be taken into account to explain the situation of the experimental subjects. By construction, most evaluated interventions will directly affect the poor or their immediate environment. In turn, this suggests that most causes of poverty can be remedied within the restricted causal space of the field site. Moreover, RCTs anchor poverty in the present time: all the data is collected within a couple of years maximum[57]. Causality is framed as a synchronic

[57] Here I must mention one exception: the children who were dewormed as part of the late 1990s deworming study were tracked and surveyed ten years later. The economists who conducted that follow-up study were trying to identify long-term effects to deworming (Baird et al., 2015).

(rather than diachronic) relation, excluding potential causes lying in the past[58]. Not only do experiments place the reflection on poverty beyond the reflexivity capacity of the poor, but they also contain the potential causes of poverty in the immediate present, and within the limits of a field site. By emphasizing the causal relations happening inside that contained space, RCT contributes to obscure systemic, historical causes of poverty to be found outside of the experimental space, perpetuating a "vigorously un-relational" understanding of poverty (Webber, 2015, p. 47).

The experimental setting of RCT also contributes to organize the relations between the participants. In particular, it depoliticizes the relation between the participants assigned to the treatment or control group. Reflecting on RCTs testing cancer treatments, anthropologist Sarah Lochlann Jain observes that randomized controlled methodologies are not only based on comparison, but also on a logic of competition between the groups.

> "RCT logic is such a structuring principle of our time that its key requirement barely registers: two groups compete, one wins. Albeit evacuated of intent or skill, the trial reflects the logic of war (each side aims to outkill and outinjure the other) or the principle of sport, in which sides compete for goals, points, or marks." (Jain, 2013, p. 117)

This remark, also applicable to the use of RCTs in development policy-making, resonates with this chapter's argument: RCT produces a vision of the world, through its discourses, framings and practices. It achieves a reduction of the world, in which each group becomes a reference and a point of comparison for the other. The horizon created by the experiment for the control group is to eventually benefit from the intervention tested on the treatment group, while the situation of the treatment group is assessed in terms of the progress accomplished compared to the control group. I argue that the design of RCTs contributes to restrict the collective horizon of the poor, by focusing attention on how each group fares relatively to the other. RCT evacuates other possible comparisons, e.g. with the country's middle-class population, or across countries. The type of comparisons produced by RCTs configures the political aspirations afforded by RCT findings. Sociologist Margarita Rayzberg shows that the RCT proponents restrictively reinterpret the concept of fairness as something to be accomplished and staged within the limits of the experiment setting. Fairness problematized as something that can be

[58] On a side note, poverty is often described as the anomalous survivance of the past within an affluent present (Roy and Crane, 2015, p. 23).

guaranteed by organizing lotteries diverts the attention from more comprehensive meanings of fairness, rooted in political economy visions.

> "In these scientific pursuits, the definition of fairness is limited to equal opportunity for treatment. To justify this definition, advocates of the method at times make assumptions about their intended beneficiaries' attitudes toward randomization. These assumptions can serve to normalize the very inequality the community of development economists claims to be working to correct." (Rayzberg, 2018, p. 20)

Setting an experiment with a treatment and a control group leads to entrenching the idea that resources are rare and should be competed for; it asserts that poverty must be solved in an inexpensive way. RCTs disentangle the relations between the field site and its outside; they contain the relevant social and political relations to the field sites. RCTs seclude the possible causes of poverty to epistemic fragments of the world. Consequently, they suggest to seclude poverty action to these fragments, while leaving the rest of the world unquestioned. RCTs address an imperative of social transformation to the poor, while leaving the rest of the world unburdened: this is what I call the micropolitics of poverty.

Conclusion

Micropolitics of poverty refers to various practices of producing fragmentation, disconnection and disentanglement. RCTs seclude the causal space of poverty within territories inhabited by the poor; and within these territories, they isolate the causes of poverty from one another. One expression of the epistemic and political fragmentation of the world accomplished by RCTs is the scientific focus on individuals living in poverty, as if producing knowledge about them was sufficient to understand poverty. Scrutinizing the poor allows for turning a blind eye on the systemic and historical causes of poverty, and to restrict the scope of policy-making within the inside of the areas inhabited by the poor. The space of causes, as it is constructed, affords to problematize poverty in a way that is unchallenging and inoffensive: it places the burden of the transformation exclusively on the poor.

Therefore, the achievement of RCTs goes beyond the effect they have on its participants. RCTs, by staging their action on the poor, also address the non-poor. By showing the world that it is possible to tackle extreme poverty in a way that does not require any transformation outside of the spaces inhabited by the non-poor, RCTs deliver a reassuring discourse: a reasonable amount of aid, rationally funneled toward the most efficient solutions, can reduce extreme poverty.

RCTs operate by enclosing poverty within scattered territories that are not defined once and for all, but that fluidly encompass and entrap poverty, preventing the problem from leaking outside, in the non-poor world.

> Lapérouse crosses the path of the Chinese fishermen at right angles; they have never seen each other before and the huge ships are not here to settle. The Chinese have lived here for as long as one can remember whereas the French fleet remains with them for a day. These families of Chinese, as far as one can tell, will remain around for years, maybe centuries; L'Astrolabe and La Boussole have to reach Russia before the end of the summer. In spite of this short delay, Lapérouse does not simply cross the path of the Chinese ignoring the people on shore. On the contrary, he learns from them as much as he can, describing their culture, politics and economics—after one day of observation! — sending his naturalists all over the forest to gather specimens, scribble notes, take the bearings of stars and planets. Why are they all in a hurry? If they were interested in the island could they not stay longer? No, because they are not so much interested in this place as they are in bringing this place back first to their ship, and second to Versailles. […] Everything depends on them: L'Astrolabe can sink provided the inscriptions survive and reach Versailles. (Latour, 2003, p. 218)

Chapter 2 – Fieldwork: the labification of remote villages

Introduction

This chapter describes how remote villages in a poor country are turned into places in which an RCT can successfully take place. All the material operations aimed at bringing the experiment to the villages, implementing its various components and collecting data are subsumed under the broad category of fieldwork. The Kianga Energy Research Project is characterized by the variety and the complexity of its fieldwork. The fieldworkers not only conduct interviews but they also organize lotteries and solar light distributions obeying sophisticated protocols. In this chapter, I mostly discuss the data collection component of fieldwork; the implementation of lotteries and solar light sales is discussed in chapter 4. These operations are often (if not always) squeezed out from the scientific articles published in the aftermath of an RCT, as if fieldwork

was a smooth and unproblematic process. Observing the enumerators[59] at work suggests the contrary: the various tasks they perform are painstaking and they require problem-solving skills. The chapter focuses on these material difficulties and how they are overcome. How do the enumerators turn remote off-grid villages into places that be reached and studied? How do they persuade people to participate in the experiment? Last but not least, one of the biggest challenges for the enumerators is data collection. The enumerators are tasked to perform structured interviews with the villagers, using a questionnaire that was designed to accommodate the needs of the economists who pilot the experiment at a distance rather than those of the enumerators and respondents when they meet in the villages.

Part of the difficulties arising during fieldwork are related to the global nature of RCT. Fieldwork is full of "friction." Anthropologist Anna Tsing developed the concept of friction in an attempt at countering the prevalent narrative describing globalization as a smooth process in which people, capital and commodities flow freely across the globe. She argues, on the contrary, that "global connections […] come to life in 'friction', the grip of worldly encounter" (2005, p. 1). Friction describes "the awkward, unequal, unstable, and creative qualities of interconnection across difference" (2005, p. 4). It is ambivalent and versatile: it both enables and impedes global connections. Contrary to Tsing, I do not analyze the cultural dimensions of global interconnections; but like her, I focus on the material encounters resulting from global undertakings. The project of this chapter is to elicit the micropolitics of fieldwork, through the ethnographic description of the frictions arising during fieldwork and their resolution. I discuss fieldwork as one actualization of the political dynamics at play between the people and organizations planning, conducting, or funding the RCT on the one hand, and those who see it arriving in their villages on the other hand.

Although the economists create the blueprints of fieldwork and pilot it, through detailed research protocols and frequent phone meetings with the local field managers, they only very rarely visit the field (if at all), and when they do so, it is for very short periods of time. Another reason for studying fieldwork is that it provides the occasion to observe the encounter between the experimental project and its recipients, the off-grid villagers. The enumerators and their on-

[59] As a reminder, the fieldworkers are the manpower hired by Evidence against Poverty to implement some material features of the Kianga Energy Research Project. Their main task is to survey the villagers. Most of the fieldworkers occupy the simple position of enumerators. More experienced fieldworkers work as team supervisors, mobilizers or backcheckers. The team supervisors manage 4 to 6 enumerators. The mobilizers visit the villages in advance to make a first contact with the villagers and make sure they will make themselves available when the enumerators come. The backcheckers reinterview some villagers to check on the enumerators' work.

site managers are the face of a project. In many cases, the presence of EvaP's enumerators in the villages is thicker and more significant than the presence of the staff of the implementing partner[60] (Kianga Energy Ltd.). The enumerators visit the villages more often, to the point that EvaP is sometimes (mistakenly) identified as their unique interlocutor by the villagers, who do not necessarily view Kianga Energy Ltd. as a separate entity[61]. Although the enumerators are casually employed on short-term contracts, at the lowest paygrade, they perform various and complex tasks that require specific skills as well as a great deal of cunning intelligence. This situation is not specific to RCTs, it also prevails in demographic surveys:

> "Although the interviewer is usually the most poorly paid and least well qualified link, right at the beginning of the chain of data production, we must recognise that s/he is the critical building block of the whole survey enterprise, through their vital contact with the population which is providing the data. We must not lose sight of the immense power of the interviewer over the quality of the raw data, and thus the analyses and any subsequent policy decisions." (Randall et al., 2013, p. 784)

The enumerators strive to go from a series of instructions and criteria to a practicable experimental site. Many operations that are necessary to locate eligible villages, and thus to materialize an experimental sample that is, in its first version, very abstract. The enumerators can be regarded as technicians. Stephen Barley and Beth Bechky comment on the important yet invisible role of technicians working in science labs:

> "Most technicians manage an interface between a larger work process and the materials on which the process depends. As a result, technicians usually enable the work of other occupations, especially professional and managerial occupations." (Barley and Bechky, 1994, p. 88).

But contrary to the activity of laboratory technicians, the enumerators' activity is neither regarded as "esoteric", nor as requiring particularly complex techniques or technologies. In this chapter, I shed light on the enumerators' specific expertise and know-how.

Fieldwork is the moment when the plans and timelines elaborated at a distance by the principal investigators of the project are put to the test. Many (logistic, cognitive, affective) frictions arise and the enumerators are the ones who deal with them. One of the objectives of this chapter is

[60] As a reminder, RCTs normally involves a partnership between an NGO, a social business or a governmental organization implementing a poverty-reduction program, and economists evaluating this program. Here, Kianga Energy Ltd. is a social business selling low-cost clean energy products to poor off-grid dwellers. More details about this business are provided in chapter 5.

[61] Marek, the field manager for the Kianga Energy Research Project, explained, half-amused and half-frustrated, that he received several phone calls from villagers experiencing problems with a light or with a solar panel. The villagers did not always distinguish between the company selling the lights and the organization carrying out the surveys.

to shed light on their crucial but often overlooked role. There is virtually no publications dedicated to the fieldworkers. I could find one post published by RCT practitioners (including a senior economist) on a World Bank blog shines the spotlight on the enumerators with three short interviews (Kondylis et al., 2019). But these interviews focus on the enumerators as wage-earners improving their living conditions[62], and do not discuss the details of the activities they perform.

Despite the importance of fieldwork in RCTs, it has not often been studied. RCT-proponents, of course, do not take fieldwork as an object of research; fieldwork is but an instrument that allows them to study their object. Therefore, when they write about fieldwork, it takes the practical form of general advice and warnings about potential pitfalls in manuals and guidelines (Duflo, Glennerster and Kremer, 2006 ; Glennerster, 2017). There is an emerging literature on the use of RCTs in development economics, mostly produced by young social scientists (Donovan, 2018 ; Gedeon Achi, 2019). Some of them have written about fieldwork, but they had to rely exclusively on interviews, due to a difficult access to the field sites (Jatteau, 2014 ; Rayzberg, 2018). The principal investigators of RCT projects tend to be very protective of their field sites[63]. As explained in the introduction of the dissertation, I benefitted from lucky circumstances and was able to accompany the enumerators in the villages as often as I wanted. I was free to shadow them and observe their work all day long. I occasionally helped them with menial tasks (e.g. making lists, counting money) and sometimes took part in discussions when the team was faced with a dilemma or a difficulty. The walks from one interviewee's house to the next, the long car trips and occasional dinners at cheap tea parlors gave me ample time to get to know some of the enumerators – which was all the easier than most of them were roughly in my age group, and welcoming. Many of them were willing to comment on their job and to debrief their activities with me.

In this chapter, I argue that fieldwork produces an effect of its own, that it possesses a proper efficacy, distinct from the efficacy of the intervention rolled out by the research consortium and Kianga Energy Ltd. To clarify my contention, I must first exclude a possible interpretation of it. Indeed, the economists practicing RCT also wonder about the potential effects of fieldwork.

[62] Interestingly, this blog post is similar to Kianga Energy Ltd.'s online publications featuring micro-entrepreneurs' testimonies about the new purchases and investments they could afford thanks to their new source of income. In this World Bank blog post, the enumerators are described as people who are being developed through employment rather than workers performing an essential task.

[63] In the introduction of his PhD dissertation, Arthur Jatteau recounts how he rapidly got blacklisted by the RCT-community after expressing criticism towards the methodology, and how researchers affiliated to the J-PAL were discouraged to meet with him (Jatteau, 2016).

They anticipate that fieldwork might remind the participants that they are part of an experiment. Duflo and colleagues, in a "toolkit" they wrote to the attention of economics students and researchers interested in designing an RCT, warn against the two ways in which participants may adjust their behavior when being conscious of the experimental setting.

> "Changes in behavior among the treatment group are called Hawthorne effects, while changes in behavior among the comparison group are called John Henry effects. The treatment group may be grateful to receive a treatment and conscious of being observed, which may induce them to alter their behavior for the duration of the experiment (for example, working harder to make it a success). The comparison group may feel offended to be a comparison group and react by also altering their behavior (for example, teachers in the comparison group for an evaluation may 'compete' with the treatment teachers or, on the contrary, decide to slack off). […] What makes an experiment special is that individuals may know they are part of an evaluation and may thus react to the very fact of being evaluated, not only to the inputs received." (Duflo, Glennerster and Kremer, 2006, pp. 68–69)

The authors then recommend possible ways of controlling for such effects and methods for measuring the statistical biases they create. In contrast, when I discuss the effects of fieldwork, I do not attempt at exposing the interferences that might affect the statistical estimations of the impact of the intervention. In this chapter, fieldwork is not taken as an occasion to comment on the pitfalls of the RCT methodology.

Fieldwork is taken as a concrete, material encounter, gathering villagers and fieldworkers around a series of operations. I am interested in the subtle transformations that might result from the encounter between EvaP's teams[64] and the villagers. What are the potential effects of creating the occasion of an encounter between educated, English-speaking, urban young adults and off-grid villagers, who grow their own food for a living? What do enumerators learn and feel when they travel to the villages and interview people? What may the villagers learn and feel when they are asked questions read from a touch-screen tablet by a conscientious enumerator? I examine the emergent, unprompted effects of the presence of the fieldworkers in the remote villages where they travel to collect data. Following historian Guillaume Lachenal and anthropologist Aïssatou Mbodj-Pouye's invitation to investigate the affective dimensions of development (2014), I suggest that one of the emergent effects of the fieldwork is to create aspirations to a better life. Because I did not directly engage with the villagers[65], I do not

[64] As a reminder, Evidence against Poverty (EvaP) is an international organization specialized in implementing RCTs. EvaP partners with the Research Group 5 on the Kianga Energy Research Project.

[65] The reasons why I chose not to interview the villagers or observe them outside of the occasions provided by EvaP's field visits are exposed in the introduction of the dissertation.

conclude anything about whether fieldwork triggered any actual transformation in the villagers' lives. Rather, I argue that experimenting, regardless of which program is tested through the RCT, is a form of intervention in and of itself.

The **first section** of the chapter describes the exploration and mapping of the field site. How are remote, unmapped villages turned into a reachable, knowable space? This empirical question provides the occasion to reflect on an important characteristic of RCT, regarded as a global undertaking: the attempt at increasing the legibility of distant places. The **second section** describes the mobilization of the villagers, meaning the various processes aimed at enrolling them into the experiment and ensuring their willingness to collaborate with EvaP's teams. It discusses the conditions of possibility of RCT, and in particular the economy of promises on which mobilization operates. The **third section** focuses more closely on the structured interviews conducted by the enumerators to collect data on the villagers. I describe the data produced during these interviews as anchored fictions, created as the best possible way to negotiate the constraints of the questionnaire.

Section 1: Seeing like a randomized controlled trial

1.1. The politics of fieldwork

Who can produce knowledge on whom, and which power dynamics does that relationship create? This reflection is classic and can be traced back, for instance, to Foucault's power-knowledge nexus: making people into objects of knowledge is necessarily a political operation as much as an epistemic operation. Such reflections particularly resonate when it comes to RCT. Whereas the vast majority of RCTs testing poverty-reduction programs have been conducted in former colonies, 84% of the lead authors of the scientific publications based on an RCT are affiliated with institutions in the US or in Western Europe (Hoffmann, 2020). The experiments are mostly conducted by white, privileged researchers on impoverished people of color. Furthermore, social scientist Nimi Hoffmann argues that the question of informed consent is not taken seriously by the economists practicing RCT[66]: they rarely discuss it in their articles, and when they do it is often to explain that the participants were not informed that they were

[66] Although this dissertation does not directly tackle ethical issues created by RCT, my observations concur with Hoffmann's results: informed consent is not addressed with particular care. As described later in this chapter, sometimes information that might sound discouraging is voluntarily held back from the villagers.

part of an experiment[67]. For these reasons, Hoffmann warns against the risk of creating a continuity with the practice of colonial experiments, and calls for a moratory until "ethical safeguards are established." The failure of RCT proponents to secure informed consent from participants further emphasizes the asymmetrical knowledge relationship established through RCTs. Fieldwork participates in that dynamic, at a more "molecular" level.

This section describes the cartography and referencing operations carried out by the fieldworkers in the Kianga Energy Research Project. While the fieldworkers strive to turn the villages into reachable, knowable places where an experiment can successfully take place, the villagers do not increase their capacity to reach out to the experiment consortium and to use this new contact to their own profit.

1.1.1. Legibility: an instrument of statecraft and an instrument of research

Although the title of this section is inspired from James C. Scott's famous book *Seeing Like a State*[68] (1998), this chapter does not engage with Scott's political sociology contention. Scott criticizes socialist state planning and state-led development, warning against the disastrous unintended consequences of centralized modernization projects: this discussion lies way beyond the scope of my research[69]. However, the problem of legibility, that Scott analyzes as a central instrument of state-run modernization, is at the heart of this section. According to Scott, governments with "high modernist" ambitions need to make the sites they wish to modernize (e.g. forests, human settlements, agricultural estates) more legible. To this end, they simplify and standardize the intricated schemes (the "social hieroglyph") that preexisted planned governmental action (e.g. by introducing scientific silviculture, model villages, or

[67] "By this criterion [participants knew they were in some sort of study before agreeing to participate], 78% of authors do not discuss informed consent, 12% state that participants were intentionally left ignorant, and 10% indicate informed consent for some sort of study. No study indicated whether participants were explicitly aware they were being experimented upon. This silence on informed consent, and in some cases explicit denial thereof, suggests that it is considered less important than other elements of the experimental design." (Hoffmann, 2020, p. 2).

[68] The evocative power of that title is such that many social sciences scholars have already reused it: "Seeing Like a City" (Amin and Thrift, 2017), "Seeing Like an Oil Company" (Ferguson, 2005), "Seeing Like a Market" (Fourcade and Healy, 2017), and closer to the object of this chapter, "Seeing Like a Research Project: Producing 'High-Quality Data' in AIDS Research in Malawi" (Biruk, 2012) and "Seeing like a Survey" (Law, 2009).

[69] It is however interesting to note that Scott, in later editions of *Seeing Like a State*, suggested that neoliberal globalization creates the same type of standardization and homogenization effects than the socialist developmentalist states used to create in the late 20th century. This argument is challenged by anthropologist James Ferguson, who argues, based on African case studies, that globalization operates in the form of very territorialized investments: capital does not *flow through* Africa, but *hops over* most of it to reach small enclaves where resources are extracted (Ferguson, 2005).

collectivization). In so doing, Scott deplores, they destroy precious ecosystems, social organizations and the practical knowledge and know-how mastered by smaller actors.

In the case of the Kianga Energy Research Project, the entity attempting at making a site legible is not a state or a government animated with a modernization ambition, but a research consortium. Legibility therefore does not consist in making a territory easily graspable by a central power, but by a "center of calculation" (Latour, 2003). Centers of calculation are important loci in the practice of science: they are hubs where the material traces collected during scientific expeditions (e.g. fossils, soil samples, paper questionnaires) are centralized, organized and combined together in inscriptions, which are in turn combined together in second-order inscriptions, which are then combined to produce third-order inscriptions, etc. One example used by Latour to illustrate the notion of center of calculation is a statistical survey institute: respondents cannot travel to the census bureau, but are represented by the paper questionnaires on which their answers were inscribed. The questionnaires, too numerous to yield any information at the first sight, form useless piles of paper stored in cardboard boxes until they are treated and combined into a dataset. The dataset enables the calculation of numbers, which in turn enable the calculation of proportions, and so on. In this chapter, I focus on just one sequence of the cycle of accumulation of facts and data: how the respondents are chosen, found, reached, and how their answers are turned into completed questionnaires.

Let us now go back to Scott's argument. In the various cases he analyzes, legibility is used by governments endowed with political legitimacy and/or coercive powers as a means to an end of governing, in the sense of Michel Foucault: make a population prosperous, healthier and more productive[70]. In the case of the Kianga Energy Research Project, legibility is used by a small team of foreign economists and its institutional partner (EvaP) to carry out an experiment. On the one hand, the experiment tests an intervention that also aims at making people healthier and more productive. On the other hand, although the experimenters are also engaged in an enterprise of modernization, or at least, of improvement, their commitment to the field sites is much more limited in time, in depth and in ambition. Moreover, the experimenters do not have any coercive power and only little political clout: they have to persuade people to participate – this issue will be further discussed in section 2. Despite these differences, the need for legibility is very similar, and many of the "instruments of statecraft" described by Scott (e.g. maps,

[70] This definition of government is developed in *Security, Territory, Population* (Foucault, 2009)

censuses, personal identification, statistics) are also instruments of scientific practice (Biruk, 2012).

1.1.2. The distant politics of metropolitan development economics

Within the literature criticizing the use of RCT for poverty alleviation purposes, one article stands out from the lot with one argument seldom formulated elsewhere (Reddy, 2012). Heterodox development economist Sanjay Reddy qualifies RCT as a "metropolitan" practice, RCT-proponents as "metropolitan" development economists, and Duflo and Banerjee's readership as a "metropolitan" public. Although he does not explicit his use of the term, Reddy argues that, for various reasons, RCT is chiefly attractive to rich country inhabitants, who, despite their benevolent interest in the poor, live at a comfortable distance from them. The simplistic vision of the world championed by RCT-proponents provides decision-makers and interested laypeople with "soundbites" and easy, reassuring solutions that comfort them in their naïve "do-goodism." Reddy's contribution sheds light on one obvious but understudied characteristic of RCT: experiments are organized and funded in developed and rich places to be implemented in poor places. The data collected on site then travels back to the "metropolitan" centers where the economists live and work, to be analyzed. The results of the experiments are then published in various forms (scientific articles, policy briefs) and circulated, mostly in the developed world. Raw material (data) is extracted from poor countries to be transformed and made valuable in rich countries. In some rare cases, when an experiment has proved particularly successful with regards to its cost-effectiveness ratio, it may be replicated and scaled-up[71]. RCT operates on the basis of repeated connections and circulations between what Reddy calls a metropolitan center – and what we might call a "center of calculation", using Latour's conceptual vocabulary – and an experimental site.

In the chapter of *Science in Action* where Latour elaborates the concept of center of calculation, he starts with a prologue entitled "the domestication of the savage minds" (Latour, 2003). In this prologue, Latour comments on the dynamics of relative power between European explorers and Chinese autochthons. When Lapérouse and his crew first land on the unmapped place called Sakhalin, or maybe Segalien, that according to their information may be either an island or a peninsula, they are in a position of weakness compared to the Chinese fishermen they meet,

[71] A recent PhD dissertation in anthropology discusses the scaling-up of two interventions (installation of water chlorination devices, school-based deworming) previously tested through an RCT and deemed successful (Gedeon Achi, 2019).

who possess a more accurate knowledge of their territory. The autochthons share a map with Lapérouse and confirm that Sakhalin is indeed an island, separated from China by a strait. But when the next European ship reaches Sakhalin, its crew will be in a position of strength compared to the Chinese fishermen, thanks to the map and the information brought back to Europe by Lapérouse. According to Latour, the gap between the autochthons and the European explorers grows deeper at that point. Not that there is any cognitive difference between the Chinese and the Europeans, but the explorers are part of a network of accumulation of facts and data collected in various parts of the world. They collect bits of "ethnogeography" and formalize them using a systematic metrology and inscription system. There is a difference between those who travel back and forth between a "center of calculation" and various places, and those who remain "locals." Latour insists on the importance for Lapérouse of sending his report to Versailles, which opens the possibility for further ships to go back to the Pacific Ocean. For which purposes? Naturalist expeditions? Trade? Military adventures? In any case, the Europeans will be able to act at a distance in the Pacific. Let us now jump in space and time, from Sakhalin in the late 18th century to the Kianga Energy Research Project's field site in East Africa, in late 2016. According to Latour, the successive cycles of accumulation described have gradually dug very large gaps between some places and others, producing

> "a disproportionate relation between those equipped with satellites who localize the 'locals' on their computer maps without even leaving their air-conditioned room in Houston, and the helpless natives who do not even see the satellites passing over their heads." (Latour, 2003, p. 221).

The Kianga Energy Research Project also involves acting at a distance. A small group of people (the economists) can access data (demographic data, censuses, scientific literature) about a larger group of people (the off-grid villagers), who, by contrast, cannot in any way reach or know the economists, at least not prior to the beginning of the project (and barely afterwards). The asymmetries between the inceptors of the research project and the subjects of the experiment are multiple (informational, material), and significant: whereas the villagers are in their vast majority extremely poor and with little to none formal education, the experimenters operate on a $1.7 million budget to reach them. As Lapérouse's patron, they await the results of the expedition, that feeds a cycle of accumulation of elements that enable further action at a distance. In the case of RCT, there is a more and more systematic imperative to register each experiment in repositories[72], and to make datasets collected during an experiment publicly

[72] For instance, the American Economic Association manages one of these randomized controlled trials repositories: https://www.socialscienceregistry.org/

available. Moreover, there is an explicit ambition to replicate similar experiments in different places in the global South. The different experimental field sites of different RCTs falling under the "poverty alleviation" umbrella are networked, through various platforms and organizations. The result of one experiment conducted in, say, somewhere in South Asia, might be considered relevant for somewhere in Central America. The description of the general economy of relations between the field site and the economics laboratories where the experiments are conceived and analyzed makes clearer what development economist Sanjay Reddy might have meant when using the term "metropolitan" to describe RCTs and RCT-proponents. RCT involves action at a distance, that is based on a simplified and simplistic perspective on poverty. Moreover, it produces chiefly results that are very easy to circulate in attractive forms to the decision-makers and development brokers of the richest parts of the world. I analyze fieldwork as being part of this back and forth circulation pattern.

1.2. Turning an abstract sample into hundreds of reachable villages

What is a sample in an RCT, and how is it built? In the case of Kianga Energy Research Project, upon completion of the experiment, the sample consists in a list of 1088 households, located in 272 villages. The 272 villages are part of two separate administrative districts, one located north of the capital city, and the other located south of the capital city. In this list, each household is identified with a unique six-digit code, and each village is also attributed a unique identification code. Before the start of the experiment, however, the sample is not yet a list. It consists in an abstract set of criteria, defined by the economists in concertation with the implementing partner, Kianga Energy Ltd. The sample is thus not the ex-post result of the aggregation of specific places; it is an aggregate composed of yet unknown parts, to be located and included gradually. Actually, it is not even certain that the two administrative districts in which EvaP obtained the authorization to conduct research contain as many eligible villages as the experimenters would like. Below, I develop the different criteria presiding over the construction of the sample: sample size, arithmetic criteria, administrative criteria, business feasibility.

The sample size is crucial in randomized controlled experiments. First, the principle of randomization is based on the statistical law of large numbers: if the sample is large enough, then any random subsample should be similar on average to the whole sample. In other words, it is the law of large numbers that ensures that the treatment and control groups are similar on average to each other, and thus comparable. Moreover, the robustness of the statistical

inferences that the economists will perform after completion of the experiment also depends on the sample size. The statistical power of an experiment refers to the probability of detecting an impact when there is indeed an impact to be detected. The larger the sample, the larger the statistical power of the experiment. The Research Group 5[73] initially aimed for enrolling 300 villages in the experiment, which according to their calculations would ensure sufficient statistical power[74].

The size of 300 villages also presented interesting arithmetic properties: it is divisible by two, allowing to form a treatment group and a control group of the same size (150 villages in each group). It is also divisible by three, which corresponds to the number of gender assignments planned in the design of the experiment: in one third of the villages, the micro-enterprise is to be run by a group of four women, in one third of the villages, by a group composed of two women and two men, and in the 100 last villages, the micro-enterprise is to be run by an all-male group of four people. The break-down of the sample into even sub-samples is represented below (fig. 3).

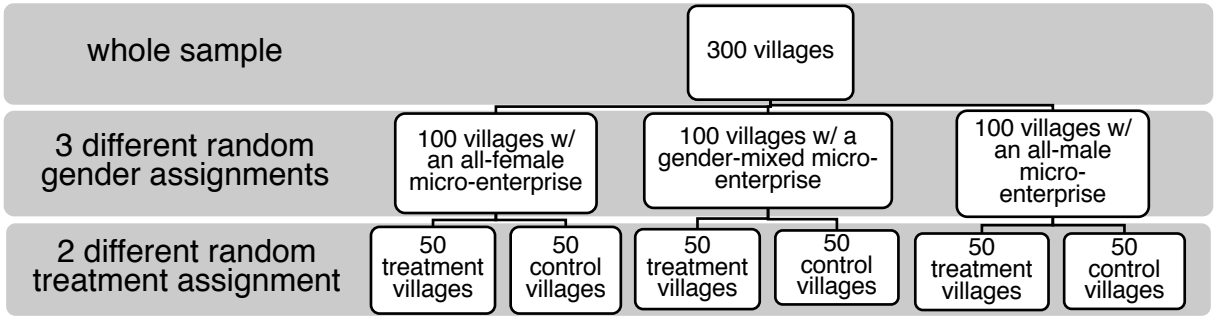

Figure 3: Example of repartition of the sample in six even subsamples

The experiment unrolls in two different and non-contiguous administrative sectors, which is exceptional according to the experimenters, who insist in the final report addressed to their funder that most RCTs unroll in one location only. The country where the Kianga Energy research project takes place enforces strict research control: EvaP had to request the authorization of the national ethics committee board, and then the formal permission of local authorities. The sample cannot extend beyond district lines.

[73] As a reminder, the Research Group 5 is the team of economists who work on the Kianga Energy Research Project. The Research group 5 is described in more details in chapter 3.

[74] The discrepancy between the initial goal of recruiting 300 villages into the experiment and the final sample size (272 villages) will be further discussed in section 2.

The last set of criteria is related to Kianga Energy Ltd.'s business. To be eligible, the villages must be not only off-grid but also without access to solar panels (i.e., there should be no competition to Kianga Energy Ltd.'s business). To ensure a reasonable clientele to the micro-enterprises, the villages must include a minimal number of households – this minimum was initially set at 100 households, but lowered at 80 – 90 households per villages later on.

Finally, one important feature of the sample is its uniformity: at any level, its building blocks are elements of similar size and composition. The sample is supposed to be evenly divided into the different subgroups: in each village, four households are included in the sample[75]; all the villages should be composed of more or less 100 households; there should be as many villages in the treatment and control group; and there should also be a balance between the villages with an all-female, all-male or mixed micro-entrepreneurs' group, etc. This experimental design divides the experimental site into homogeneous, comparable modules. This modular organization of space pertains to the paradigm of scalability, defined as a feature that preserves the nature of a project when it grows larger, i.e. when further modules are added to it. Anthropologist Anna Tsing argues that most modern science is based on scalable designs – she takes the example of economics:

> "Only data that have been gathered to fit a particular standard allow the research to be expandable. The units of analysis must be stably defined across instances and interchangeable in their relationship to the research frame. […] This kind of knowledge cannot see nonscalability, because of the constitutive scalability of its own practices." (Tsing, 2012, p. 522)

Several remarks can be done regarding RCTs and scalability. First, the scalability paradigm strongly echoes with RCT-proponents' agenda, and with the idea that effective poverty-alleviation solutions should be scaled-up across the Global South at large. For anthropologist Anna Tsing, such scalable projects tend to erase diversity and interrelations[76]. Tsing argues that the historical matrix of scalability can be found in the colonial plantation model, in which the "native entanglements of humans and non-humans" are destroyed or denied (forest is cleared, indigenous people displaced and dispossessed), to make room for imported plants and workers (sugar cane, enslaved Africans), easily alienated and controlled in the plantation landscape. Without pushing the parallel too far, scalability, in the case of the plantation as in the case of

[75] The four micro-entrepreneurs are surveyed, they answer questions about the whole household. Then, a teenage child living in the household is also shortly interviewed.

[76] Authors have nuanced her assertion and argued, based on the study of large-scale vaccination campaigns in Africa, that scalability does not erase but reveals diversity, through failures and maladjustments that are gradually taken into account to better adapt vaccination to particular contexts (Ehrenstein and Neyland, 2018).

the experiment, is an instrument that allows bringing a project from afar, without committing time and energy to studying the landscape or understanding the existing "entanglements" beforehand.

One particular feature of scalability – the fact that the modules composing a project are disentangled from one another, that interrelations are undone – does remind of one important hypothesis on which the internal validity[77] of RCT is based. The variables must be independent from each other, which means that the outcome observed for one variable will not affect the outcome of any other variable. The canonic example is coin flipping: if one flips a coin a hundred times, each coin toss is independent from the others. The result (heads or tails) obtained the first time cannot in any way influence the following coin tosses. In the case of social experiments, this is of course more complicated. Does the achievement of one particular household or village not influence the achievement of the next household or village? Harder to claim with as much certainty, but the experimental design is supposed to make sure that there is no mutual influence, no entanglement between the entities that populate the sample of the experiment.

1.3. Scientific expeditions to remote villages

1.3.1. The headquarter: EvaP's country office

As explained earlier, RCT principal investigators operate at a distance: the economists may send their instructions regarding the experimental sample, but they do not work themselves at turning the sample – a set of criteria and characteristics – into a list of places where one can travel and actually meet the villagers. To understand how the sample materializes into actual villages, let us now move a step closer to the field and go to EvaP's country office.

EvaP's headquarters are located in the eastern part of the capital city, a fifteen-minute drive away from the international airport. Off the main road that crosses the whole city from east to west, the steep downhill street that leads to the quiet residential neighborhood of R. has recently been asphalted. Behind fences and gates, large villas line the streets. Several of them display a sign with the name of an international NGO. One of them houses EvaP's offices. In front of the gate, on the pavement, a white plastic table under a large yellow umbrella serves both as a

[77] As discussed in the previous chapter, internal validity refers to "whether we can conclude that the measured impact is indeed caused by the intervention in the sample" (Duflo, Glennerster and Kremer, 2006). In other words, internal validity corresponds to a situation in which the estimated impacts are statistically unbiased.

cellphone airtime point of sale and as the reception desk for EvaP: there is a notebook for visitors to register their name, as well as the date and reason for their visit. The house is surrounded by a neat garden, tended to by a man in blue overalls, who also works as the doorman – and probably as the airtime sales clerk as well. The entrance door opens on a large, rather dimly lit open-space. There are no desktop computers, everyone works on their laptop. In the back of the room, a nook in the wall shelters two desks and a printer. All the employees, mostly men, look young, in their twenties and thirties. Except from one of the women, who is white, everyone else is black. From the open space, a corridor leads to small offices, numbered "Room 1", "Room 2", etc. rather than marked with the names of their occupants. The place looks quite impersonal, maybe due to a high turn-over of the staff.

Two important protagonists of the Kianga Energy research project work in this office: Marek, the field manager, and Patrick, the research coordinator. Both are educated East African men in their late twenties. Patrick works in the office most of the time, and only rarely travels to the villages. He handles the datasets, the budget, and he liaises with the principal investigators of the project. Half of his worktime is paid directly from the Kianga Energy research project budget, but he reckons that he spends more than half of his worktime on it – he is not the first person to note that the Kianga project is more complex and more demanding than the usual experiments. Marek spends a lot of time in the field. He manages the enumerators and the material rollout of the survey, which is a considerable workload. The enumerators are the principal protagonists of this chapter. Let us now meet them.

Evidence against Poverty headquarters, October, 20th, 2016, 7:45 a.m.

> Many enumerators have already arrived: a young and cheerful crowd waits in the alley and under the porch. Young women and men energetically greet each other with handshakes and hugs. They chat in small groups. Some of them look very elegant, almost overdressed, others look ready to spend the day outside with their sturdy sneakers and hats. But they all look very neat: shirts are ironed, beards are shaved, hair is tidy and shoes are polished. A handful of them, three men and two women, is gathered around a white plastic table, under the porch, and consult various documents and lists. They are the team supervisors: each one of them manages a team of four or five enumerators. Inside, in the office, Marek is busy reediting and reprinting the lists of the villages to be surveyed for the day. Yesterday, two mobilizers went to the villages that were scheduled to be surveyed, and came back with bad news. Some of the villages were not ready to be surveyed, either because the four micro-entrepreneurs had not

> yet been chosen, or because the commitment fee of 40,000 could not be gathered[78]. Marek must update the list according to the information gathered by the mobilizers the day before, and redispatch his teams to the villages that are ready to be surveyed. When he is done reprinting the lists, Marek calls the five field supervisors and briefs them. Meanwhile, the atmosphere gets bubblier: the enumerators pick up their backpacks from the ground, rush to the toilet and gather on the pavement, where the five four-wheel drive vehicles are parked. Marek gives them some instructions for the day, before they scatter and get in the cars.♦

Most of the enumerators live in the capital city and have a university degree, often in economics, accountability or agronomy. They are hired on short-term contracts, even those who have worked with EvaP for years. They describe their job as a casual job: many of them aim at finding a more formal occupation in the longer-term. Some of them plan to go back to school to obtain a master's degree. They say that the job pays relatively well[79], but it is an unstable income. They are paid by the day, hired on very short-term contacts, according to the needs of the project. They alternate periods of unemployment with busy periods when they work long hours, six days a week. They might be called one day for the next. Men in particular find it unsatisfying: being enumerator will not allow them to get married and start a family, because it is an unreliable source of income. Finally, even when they enjoy their activity, the fieldworkers are definitely not "randomistas" – they might be very professional and determined to perform their work conscientiously, but none of them is particularly passionate about the experimental methodology. They normally do not talk about "randomized controlled trial" or "experiment" but use the generic term "research." They express that they are engaged in a scientific endeavor that requires rigor, but they do not comment on the specificity of the methodology.

1.3.2. Travels and physical exposure

The enumerators engage in scientific expeditions, leaving EvaP's headquarters very early and returning after nightfall. In some case, when the villages are too far, they leave for several days, and may spend a whole week away. This was the case in the last weeks of the baseline survey[80]. Marek found a hotel, The Superb, one hour away from the capital city, equipped with a

[78] Each village must present a group of four micro-entrepreneurs abiding by the random gender assignment (four men, four women, or two men and two women from four different households). These four micro-entrepreneurs commit not only to manage the micro-business, but also to pay a "commitment fee" of 10,000 each.

[79] The enumerators' wages may vary depending on the RCT they work on: there are some variations across the different projects managed by EvaP's country office.

[80] Reminder: the baseline survey is the first wave of data collection, that happens before the randomization. Another wave of data collection, the endline, takes place in the end of the experiment.

conference room where meetings could be held and where equipment could be stocked. The hotel was used as a temporary office[81], and the enumerators were expected to meet there every morning. Some of them chose to commute with public transportation from the capital city, others shared cheap dorms for the week. This lifestyle is intense and demanding, but several enumerators said that they appreciated these occasions to travel within their own country and to discover new districts, in a context where domestic tourism is almost inexistent and reserved for a wealthy elite. The drivers came each morning from the capital city to drive the enumerators from the hotel to the field, which may take up to a couple of hours for the most remote villages. Conveniently, a team of 4 to 5 enumerators and a supervisor fits in one car – such as the one on the picture below (fig. 4). These details may seem very trivial, but all this costly and time-consuming logistics is part of the RCT.

Figure 4: A vehicle rented by EvaP parked in a village, between houses and fields. Credit: author's picture.

[81] Anthropologist Cal Biruk describes a similar temporary headquarter (a "makeshift field office") set up in a motel in Malawi by the team of a demographic survey (Biruk, 2018).

Moreover, the heavy, impressive logistics of the experiment may play a role in persuading the villagers to collaborate with the enumerators, as suggested by an article based on several demographic studies in Africa:

> "In rural areas the power of the interviewer is reflected in the power of the whole survey machinery [quoting an interviewer]: '[…] we even had a vehicle, a 4X4 bus and then more. We were mobile. And then there were two motorbikes with the 4X4. When we arrive in a village like that they know, ...that means they take us seriously. […]'" (Randall et al., 2013, p. 784)

The question of how to convince the villagers to participate in the survey is treated in the next section. For now, let us keep in mind that the ability to reach remote villages is a sign of the size and importance of EvaP.

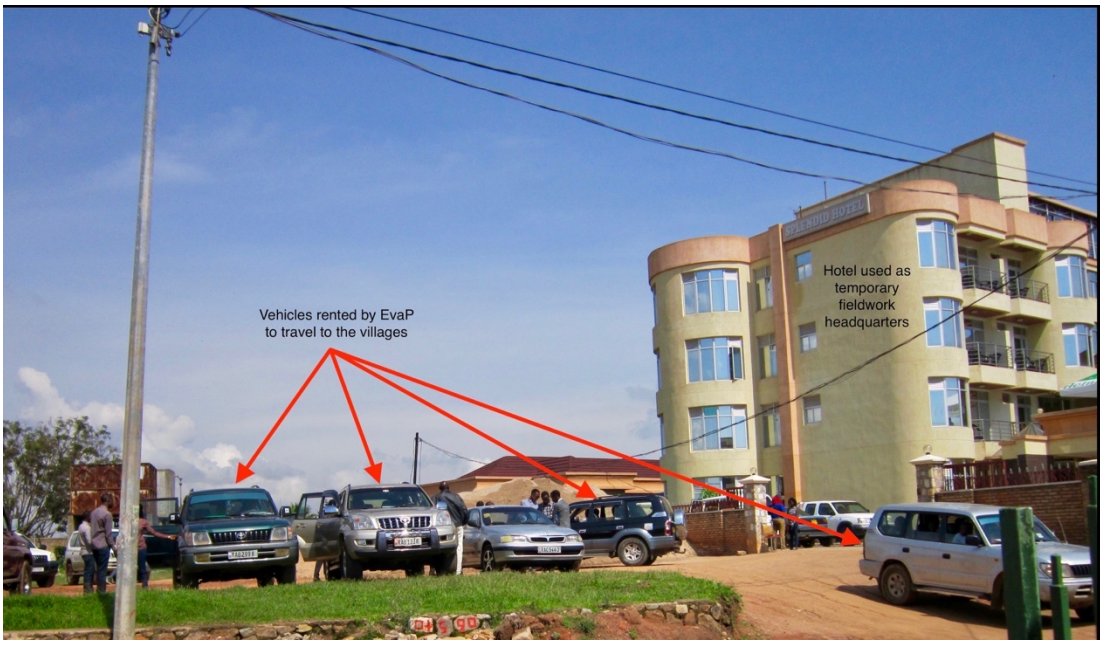

Figure 5: Rental vehicles departing from the parking lot of the hotel to the villages

For the enumerators, the travels continue on foot, from the place where the car stops to the houses of the villagers. The paths can get very narrow, dusty or muddy, and steep. Almost every time, the respondents come to meet the team where the car is parked, before taking them to their home. They often ensure the enumerators that they live close by, and the enumerators often complain that they do not have the same interpretation of "close by" than the villagers.

The enumerators who work on RCTs focused on agriculture are normally provided with rubber boots by EvaP, because they tend to walk longer distances – cultivated parcels may be located quite far from the villages – and because agricultural experiment surveys require to step in the

fields to inspect plants. The Kianga Energy project is not an agricultural project, and enumerators chose their own footwear. One morning before departing for the village, Lorie, the team supervisor with whom I spent a lot of time, was complimented by a colleague on her brand-new shoes – a pair of open-toed, elegant flat sandals. After a brief exchange about the shoes (where and how much they were bought), Lorie conceded playfully that her outfit is not very "professional." She usually wears sports sneakers, blue jeans and a baseball cap, looking ready for spending the day outdoors on rugged terrain. Walking in the hills is accepted as being part of the job. However, in one occasion, the enumerators refused to go to a particularly steep and craggy part of a village. To explain the situation to Patrick (the research coordinator), they said that some of the houses they were supposed to visit were located in "high-risk zones." They resorted to a governmental zoning category, which flags zones where the flooding or landslide risk is high – typically, very steep neighborhoods that are planned to be evacuated. The weather was very dry on that particular day, making landslides extremely unlikely. But the phrase "high risk zone" was an astute way to convey the enumerators' physical exhaustion in the heat. The arrangement they found was to ask the inhabitants of the high-risk zone to meet them down the slope the next day, on flatter ground, to be interviewed.

1.3.3. Mapping the villages

The remaining part of this section describes the cartography and referencing work (Latour, 1993a) accomplished by EvaP's teams to construct the experimental sample. To turn the sample (a list of criteria) into an actual list of villages where the enumerators can actually go requires an exploration of places that are often unmapped.

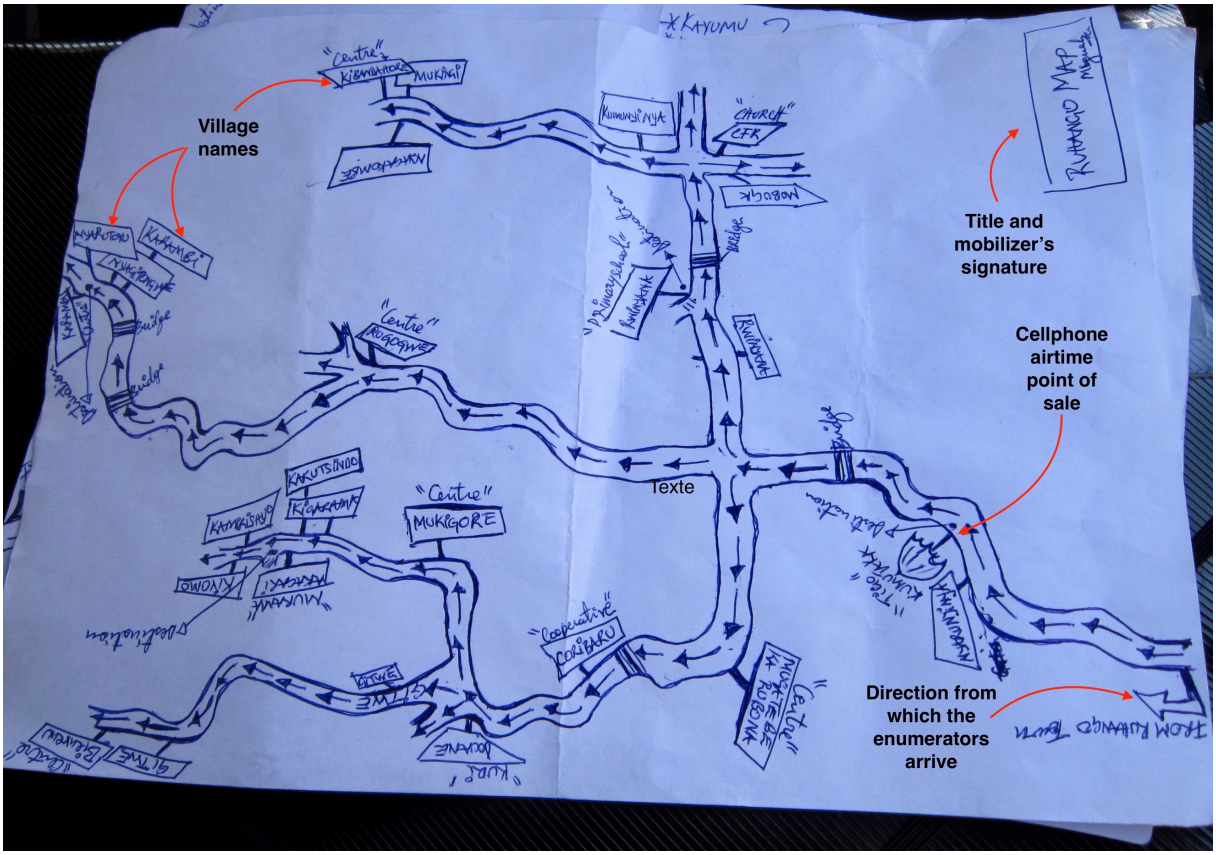

Figure 6: Map created by a mobilizer

This map (fig. 6) was drawn by one of the enumerators whose function doubles as mobilizer. Mobilizers are elite enumerators, who also act as scouts, pathfinders and mapmakers. They travel alone or by pair to the villages before the rest of the teams, using public transportation and moto-taxis. They meet the villagers, identify the village leaders and collect their contact (a phone number if they own a cellphone), to prepare the ground for a possible visit of the enumerators. Matthew's maps are particularly nice to look at. He has the habit of copying his first draft to create a neater, almost artsy version of the map. The dirt roads are represented by two continuous curved lines, with thin arrows in between pointing at the direction that the driver must follow to reach the villages from the departure town. The departure town is indicated in the bottom right corner of the sheet by a big arrow, with the following legend "From R. town". The reader might experience difficulties to read that legend, that appears upside down on the picture of Matthew's map. The original map, drawn on a sheet of paper, is designed to be held and rotated according to the needs of the user: it does not have a top or a bottom – the orientation of the picture in fig. 6 is arbitrary. The inscriptions are mostly parallel to the delineation of the closest road. Along the dirt roads, Matthew marked the villages with pictograms of road signs,

inside of which he wrote the names of the villages in capital letters. These signs are largely metaphoric: most villages do not display any sign with their name on it; it is likely that Matthew had to stop and ask people. He added some landmarks: the pictogram representing an umbrella designates a cellphone airtime point of sale. This indication allows the map users to know where they are relatively to that landmark, but also to know where they can buy airtime: the name of the telecommunication operator is specified. Bridges are figured by several close lines barring the road. Buildings (primary schools, churches) are indicated, as well as the "centers." The centers are focal points in villages, places where there is a concentration of brick houses, sometimes a few shops, and where the dirt road is usually larger and better maintained, making it easier for drivers to park. Finally, small dots marked "destination" indicate the places where the drivers need to stop.

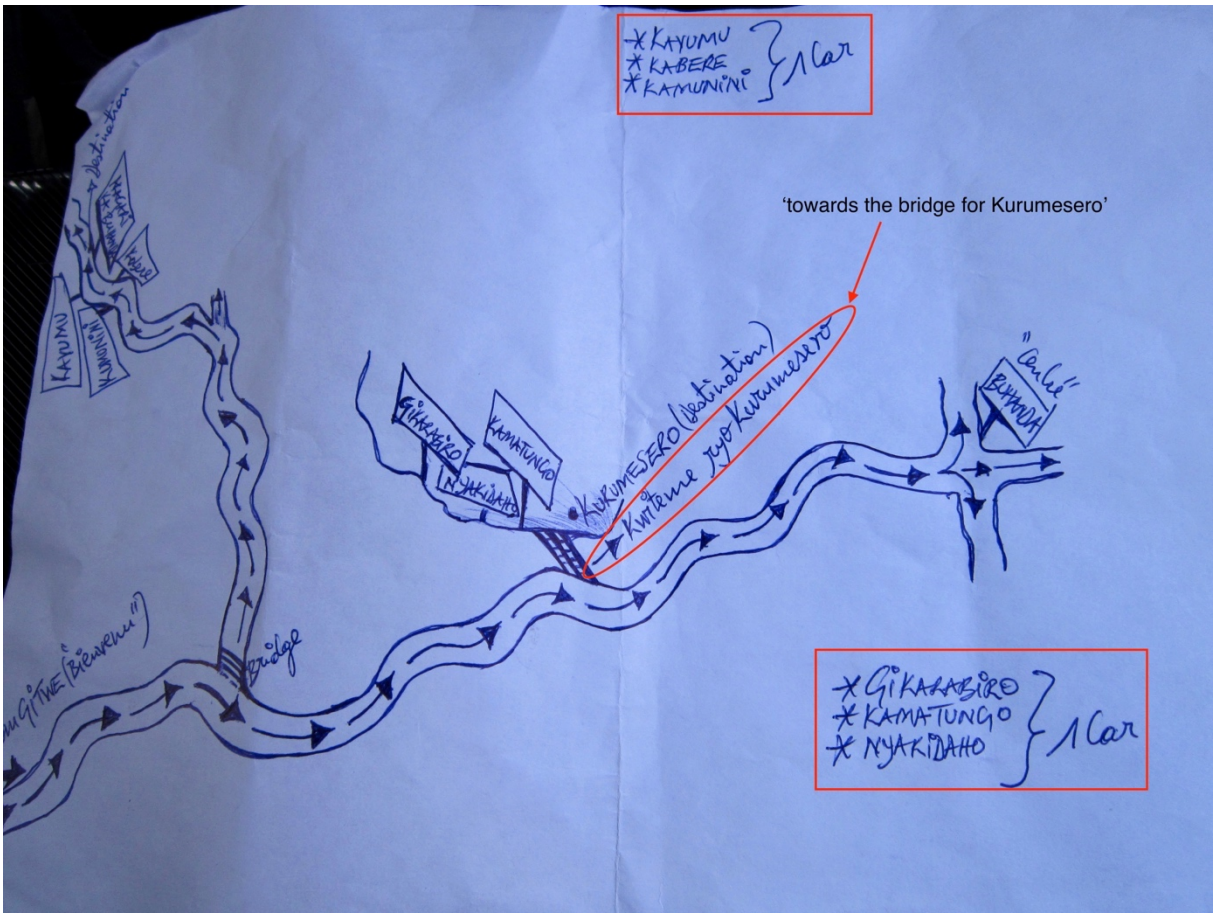

Figure 7: Map (and logistical planning annotations) realized by a mobilizer.

This map is another example of Matthew's work (fig. 7). It is simpler than the map shown in fig. 6, but it does something more than mapping the space: it also proposes a logistic plan. Matthew allocates one car (one team of enumerators) to visit a cluster of three neighboring

villages, and another car, transporting another team, to a second cluster of three villages. Not only does he know that the three villages are close enough, but that one team of enumerators might be able to survey all three villages in one day.

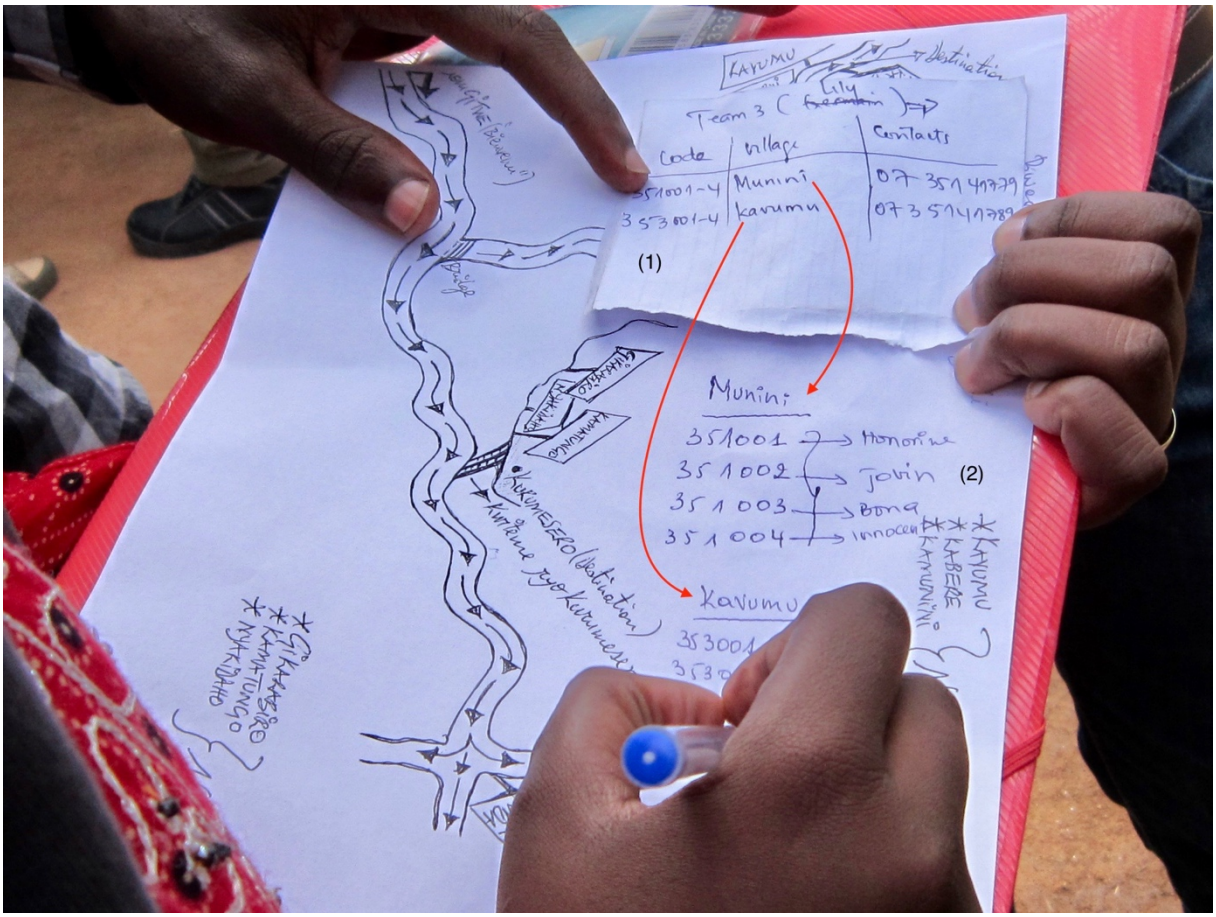

Figure 8: Team supervisor Lorie annotates a photocopy of the map shown in fig. 7. The hand in the top left corner of the map belongs to Marek.

The map drawn by Matthew (fig. 7) was brought back to Marek, who photocopied it at the office and handed out the copies to the team supervisors. On fig. 8, Lorie, one of the team supervisors, annotates the map. She holds a small piece of paper noted (1) on the picture above. It displays a table, reproduced hereafter for easier reading (fig. 9):

Team 3 (Lorie) ➔

code	village	contacts
35 1001-4	M…	07 35 ** ** **
35 3001-4	K…	07 35 ** ** **

Figure 9: Reproduction of Lorie's hand-written table (1)

The table indicates for each village the 7-digit code under which it will appear in the dataset, as well as the phone number of a contact in the village (typically, the village leader). The left column attaches the village names to their reference in the dataset, whereas the right column attaches the village names to a concrete way of getting ahold of someone living there. The same exercise of correspondence-making happens in the hand-drawn table marked (2) on Lorie's paper sheet (see fig. 10): for each village, Lorie creates a list. The list pairs up a 6-digit code with the first name of an enumerator of her team. Each enumerator will know which 6-digit code to attribute to the villager they will interview: H. will attribute her interviewee the code 35 1001, J. will attribute his interviewee the code 35 1002, etc. The first five digits of the unique identification codes are common, they are the same as the first five digits of the village code. Only the unit digit varies to differentiate the four households that will be interviewed in the village of M. This referencing operation is crucial to enable, later on, the interviews to be compiled into an organized dataset.

M…

35 1001 → H…

35 1002 → J…

35 1003 → B…

35 1004 → I…

Figure 10: Reproduction of Lorie's hand-written table (2)

On the sheet of paper on which Lorie and Marek are working (fig. 9), there is a lot of information. This document makes possible to reach the villages of K. and M., to call the village

leaders over the phone while driving there, to arrange a meeting with the four people who volunteered to manage a micro-enterprise. Finally, it provides each enumerator with a code for his/her interviewee to be identified anonymously in the dataset. This document allows to go all the way from EvaP's temporary headquarters at the Superb hotel to the houses of the four potential micro-entrepreneurs in the villages of K. and M.

What about the return trip? As in any scientific expedition, it is crucially important to get the data back to the laboratory to be analyzed. The way to the village is slow, strenuous and terrestrial. But the data travel back much faster, on a daily basis, through the telecommunication network, under the responsibility of the team supervisors. The supervisors are former enumerators who have been promoted to manage a team. Each of them is in charge of a team of five enumerators. They dispatch them in the village, accompany them and check on them when they interview people. They report to Marek, the field manager. Much of their extra work is related to the management of the touch-screen tablets. They collect tablets from Marek in the morning to distribute them to the enumerators. When it is needed, they upload a new questionnaire on the tablet. After each day in the villages, they fetch all the tablets. They have to find an internet connection and upload all the data collected during the day onto a server, where Marek, Patrick and the principal investigators of the experiment can immediately access them.

This section was dedicated to locating fieldwork, both on the map and in the world, as a set of practices encompassed in global dynamics. My description of the operations performed by the fieldworkers loosely draws on Latour's inspiring account of a scientific expedition in the Brazilian Amazonia (Latour, 1993a). But in the *Topofil of Boa Vista*, Latour is interested in how scientists create chains of reference that link the forest they explore to more and more abstract inscriptions: he shows that the quality of the scientific representation of the world depends on the robustness of the chains of reference. Here, leaning more explicitly on *Science in Action* (Latour, 2003), I mostly wish to qualify the role played by fieldwork in the general metropolitan economy of the experiment and to emphasize the amount of resources directed at reaching and getting a grip on these remote, off-grid places.

Section 2: Mobilization: preparing the ground… for what?

2.1. What does it take to collect data?

The Research Team 5 needs data at least as much as the off-grid villagers need the micro-enterprises that are proposed to them. This statement might sound provocative, but it is not: some of the villages assigned to the treatment group refused to name candidates to start a micro-enterprise because they were not interested in the LED lights proposed by Kianga Energy Ltd. Even in the villages where a micro-business was eventually created, the Research Team 5 eventually found that the small fee that the customers had to pay to have their light's battery charged made the use of the lights too expensive for most of them[82]. So, the off-grid villagers of the experiment may indeed need clean lighting devices, but not necessarily through Kianga Energy Ltd.'s commercial model. The economists, in contrast, depend on the villagers' data to successfully complete a four-year long, expensive[83] research project. The success of the experiment entirely depends on participants being compliant and willing to collaborate with Kianga Energy Ltd. and EvaP. To increase the participation rate, and to speed-up the enrollment of the villages into the experiment (and thus, the pace of data collection), the principal investigators and the on-site field management team invented many tricks and arrangements, sometimes concerted and planned, sometimes spontaneous and improvised. Although these tricks and arrangements were not properly coercive, some of them did amount to manipulate the villagers' hope. Of course, the villagers might also have regarded the experiment as an occasion to access material resources: on both sides, there are unsaid calculations. But the various asymmetries (e.g. informational, material) at play were definitely favorable to the Kianga Energy research project consortium.

The term used by EvaP to describe all the activities that are necessary to prepare the ground, literally and metaphorically, before the arrival of the enumerators is "mobilization." In the previous section, I overlooked one key dimension of that operation of preparation. Focusing on

[82] The Research Team 5 economists found (and published in their final report) that the demand for a battery charging service is extremely elastic: even a very small fee deters the villagers from recharging their lights' batteries. As a result, the average use of the Kianga LED light is low in the villages of the experiment. There are more details on pricing and economic design problems in the next chapter.

[83] RCT in general is an expensive research methodology, that requires a lot of manpower. One of the principal investigators states on their personal website that the Kianga Energy Research project runs on a $1.7 million budget.

the spatial dimension of the construction of the sample, I explained how the fieldworkers find and map eligible villages. I left aside the question of how they enroll the villagers and recruit them into the experiment. Yet, these two dimensions of the mobilization process are inextricable. Villages can be included in the sample only if the villagers are willing to create a group of four micro-entrepreneurs, abiding by the random gender constraint imposed by EvaP. Moreover, these four people should be willing and able to pay 10,000[84] each as a "commitment fee" to Kianga Energy Ltd. The intervention tested through the RCT is not a gift; it entails costs for the recipients. Then, once villagers have accepted to create a micro-enterprise, they still need to agree to be interviewed. Making sure that the villagers will make themselves available and ready to participate is an important part of the mobilization. This does not always work. In the end of the baseline survey campaign, in order to meet the deadlines, the enumerators were asked to work on Saturdays too. The first Saturday in the villages was a failure: in the area, most people were Adventists and worshipped on Saturdays, leaving the enumerators idling and waiting for hours. Each day of fieldwork requires expensive logistics and manpower; mobilization helps reducing the latency period during which the enumerators cannot perform interviews, because they need to explain what they are doing to wary villagers, or because they wait for busy respondents to make themselves available. This other aspect of the mobilization process involves various operations, such as meeting with local authorities, collecting key people's contacts, and making appointments with the villagers.

In this section, I pursue two goals. While describing how EvaP operates to ensure that the villagers will collaborate to the experiment and to the data collection campaigns, I wonder if the meaning of mobilization can be extended beyond its most obvious (logistic, organizational) uses. I ask: what *else* passes through the village while the experiment is taking place? My contention is that the whole experimental infrastructure works as a vast mobilization operation, that prepares the villagers for something bigger and a little more diffuse than the Kianga Energy project. The "infrastructure of sweat"[85] necessary to ensure the material implementation of the experiment and the data collection produces its own efficacy, which is distinct from the

[84] I do not disclose the currency for anonymization purposes. As a point of reference, at the time of fieldwork (late 2016), 10,000 was equivalent to ten to twelve days of earnings for a rural day laborer, or to ten cheap dinners in a small-town joint, or else to one night in the hotel that EvaP used as a field headquarter.

[85] This phrase is inspired by Fiona Gedeon Achi's work. In her anthropology PhD dissertation, she develops the notion of "infrastructure of efforts" and describes the "heavy, thick, and even sticky infrastructures, embedding people's energies as well as their sweat and dirt, hopes and disappointments" (Gedeon Achi, 2019).

expected effect of the micro-enterprises and solar LED lights. The encounter between the living machinery of the project and the villages operates as a subtle invitation to development.

2.2. How to enroll people into the experiment?

2.2.1. Using the clout of local authorities

The Kianga Energy research project takes place in two separate and non-contiguous districts, one located north, and the other south of the capital city. EvaP started with the northern district, and fell way behind schedule. The strategy first elaborated to recruit villages had failed. Kianga Energy Ltd. was very unpleased with the delay, which slowed down business. As a result of that crisis, a different strategy was elaborated by the principal investigators and the local management to recruit villages in the southern district. Let us compare these two successive strategies.

(1) Initial strategy – Northern district

First, Marek, sometimes accompanied by Patrick, together with one person representing Kianga Energy Ltd., requested permission to participate in one of the routine periodic meetings held at the sector[86] office. These meetings, convened by the sector leader, gather all the village leaders of the sector. At some point during the meeting, Kianga Energy Ltd.'s representative showcased the Kianga solar LED lights and explained the micro-enterprises' business model to the village leaders. Then, Marek presented EvaP and explained how the experiment works. He collected the phone numbers of the village leaders who were interested in being part of a micro-enterprise[87]. Then, in the following weeks, one person from EvaP (normally Marek) and one person from Kianga Energy Ltd. travelled to each village to supervise a public meeting, to which all the villagers were invited. This public meeting aimed at selecting the four candidates to the micro-enterprise, according to several criteria. EvaP imposes a random gender composition: the group must be composed of four women, four men or two women and two men, all coming from separate households. Kianga Energy Ltd. imposes four further conditions: the micro-entrepreneurs should live in a centrally located house, they should be regarded as trustworthy by the community, they should show that they have in their possession the sum of

[86] The sector is one of the administrative subdivisions in the country.

[87] Unfortunately, I was never able to attend one of these meetings. Marek normally traveled by moto-taxi to attend these meetings. He was reluctant to let me tag along, because he thought moto-taxis were too uncomfortable and dangerous for me – I could not convince him otherwise. To describe what happens during those meetings, I rely on various layers of explanations provided by Patrick, Marek and Kianga's country director Musaza.

10,000. Finally, they should be chosen publicly and collectively to limit the risk of favoritism. Afterwards, in each village, the four candidates to the micro-enterprise were interviewed by EvaP's enumerators as part of the baseline survey. After all the villages of a given sector were surveyed, Patrick, back at EvaP's office, would run a program on a statistical software to randomly select the villages that will be included in the treatment group. Finally, in the villages that were selected to be part of the treatment group, someone from Kianga Energy Ltd. travelled one last time to the villages to deliver the technical equipment in exchange for a commitment fee of 10,000 paid by each one of the four micro-entrepreneurs. A contract was signed between Kianga and the micro-entrepreneurs.♦

This first strategy was slow for several reasons. First, the project was dependent on the administrative calendar: Marek had to wait for the next scheduled sector meeting, sometimes for several weeks. Then, it required three to four separate trips to the villages. Finally, the take-up rate was quite low: some villages were not interested in what Kianga Energy Ltd. had to offer to them, and some other villages were interested but could not produce candidates with 10,000 to spend on a commitment fee.

(2) Strategy used to "speed-up the process" of enrolling villages – Southern district

First, instead of waiting for the scheduled ordinary administrative meetings held at the sector level, EvaP and Kianga requested the permission to convene extraordinary meetings at the sector level, at an earlier date. These meetings were entirely dedicated to recruiting villages into the experiment. The village leaders attending these meetings were compensated for their time, travel costs and help in spreading the information among their constituents. They received 3,000 as a "communication and facilitation fee." As a rough indication, this amount is equivalent to what a day laborer can earn in three to four days. At these meetings, Marek no longer explained the randomization principle on which the experiment is based to the village leaders. Some village leaders of the northern district had expressed concerns: in case their village is assigned to the control group, they feared that their constituents may blame them for not fighting hard enough to obtain the creation of a micro-enterprise. The public meeting to choose the four micro-entrepreneurs was no longer held. As Kianga Energy Ltd.'s country director put it: "we have empowered the village leaders to form the groups [of micro-entrepreneurs]. They do it perfectly without us. It shortens time and saves money." Instead of going to the villages, EvaP and Kianga phoned the village leader and asked if a group has been successfully formed. Furthermore, the "commitment fee" charged to the potential micro-entrepreneurs was lowered from 10,000 to 3,000 each, which represents less than a third of what was asked in the northern

district. Finally, the last three steps remained the same as in the northern district: the baseline survey was conducted, the villages were randomly assigned to the treatment or control group, and in the treated villages, the micro-entrepreneurs received the charging equipment in exchange for the payment of the commitment fee.♦

Let us first notice that the revised strategy to "speed-up the process" worked: it took a couple of weeks to recruit the villages of the southern district, against two and a half months in the northern district. There are several components in that mobilization success. First, EvaP managed to impose its own calendar instead of conforming to the routine administrative calendar to meet with the village leaders. Second, cutting the cost of participating in the experiment for the villagers, by substantially decreasing the commitment fee, helped a lot. Finally, the village leaders' compensation also works as a way to interest them in the experiment, and to incentivize them to use their authority or clout to convince their constituents to take part in the experiment[88]. Some of the village leaders expected that they would be paid each time the enumerators came to the village – and they did receive tips sometimes. Mobilization here involves village politics, and invisible arrangements between villagers, which sometimes become visible in the occurrence of conflict. In one case, the chief of security[89] replaced the village leader at the meeting organized by EvaP. After the meeting, he chose four candidates to the micro-enterprise. But when the village leader caught up on the matter, he did not agree with the security chief's choice: he thought that the people picked by the chief of security were not trustworthy and wanted to pick different candidates. They brought their dispute to EvaP. Finally, the village leader ended up designating himself, the chief of security and two female villagers to EvaP[90].

2.2.2. The census: criss-crossing the villages

In part of the villages of the experimental sample, where a price-testing experiment took place on the top of the core experiment[91], lotteries were organized to randomly distribute a certain

[88] Paying an elected official to persuade his community to engage with a new business… The line between mobilization and micro-bribery or micro-influence-peddling is not easy to draw in this case.

[89] Even tiny villages elect a committee composed of a leader and various other officials.

[90] This type of dispute exemplifies what French anthropologist Jean-Pierre Olivier de Sardan terms the micro-politics of development – NB: this is not at all the same use of micropolitics as the one I implement in this dissertation. J.-P. Olivier de Sardan refers to the differential appropriation of development project by local actors, who seek their own interest (Olivier de Sardan, 1993).

[91] The complex structure of the Kianga Energy experiment is explained in chapter 3. The pricing experiments are analyzed in chapter 4.

number of solar LED lights. The lights looked the same, but they were discreetly different from each other: the battery life varied, as well as the price at which the battery can be recharged – this will be detailed at length in chapter 4. In order to prepare for the random draw, and include all the inhabitants of a village in the lottery scheme, EvaP needed to identify all the households in these villages beforehand. This census was placed under the sign of distrust: the experimenters were afraid that the villagers may artificially inflate the list, in order to get more lights – according to Marek, it happened during the pilot of the experiment. The enumerators were tasked to check the physical existence of the villagers and to make sure that they actually inhabit the village. The other rationale for the census was to attribute each registered household a unique identifying code. Even if most of these households were never interviewed[92], their use of the LED light was tracked remotely via GSM data collection[93], making it necessary to anonymously identify them.

The census took place in two steps. First, a small team of elite fieldworkers travelled to each village to collect the register of the inhabitants. Second, the enumerators travelled to the village in order to find the people and register them one by one. Below, I reproduce two entries from my field notes. They were written on two consecutive days, and describe the two steps of the census.

> Mobilization day, November 1st, 2016, on the road to the villages
>
> Today, only the fieldworkers who normally work as team supervisors were called by EvaP. Marek told me that today was a mobilization day, without giving more details. […] The vehicle finally leaves the asphalted road and turns on the dirt road. We make two stops to phone the village leaders between 10 a.m. and 10:30 a.m. Fifteen minutes later, the village leader of R. jumps in the car with us. He is a short and thin middle-aged man, freshly shaved, wearing a button-down shirt and slacks. He brings with him a large notebook protected by a hard cover: this is the village register.
>
> The village leader of R. gives directions to the driver, and shortly, we arrive in a second village. The leader of the second village was waiting for us. He said that he came directly from his fields, and did not have time to swing by his home and get the register. We have to wait for him while he goes home to pick it up. One of the fieldworkers, eight-month pregnant, sits under a nearby tree, and casually chats with neighbors.

[92] This will be made clearer in chapter 3: in each village, only the four micro-entrepreneurs are interviewed.

[93] The experimenters are quite proud of the automated part of the data collection and of including big data analysis in their findings. Unfortunately, this dimension of the experiment was not salient at the time of my fieldtrip. I provide some more details in chapter X, drawing on the report published by the principal investigators.

Meanwhile, Lorie also goes to sit under the shade to copy the register of the village of R. on a loose sheet of paper. The register is very neat. Only the names of the household heads appear: 117 names, corresponding to the 117 households of this village. Lorie is very meticulous. Her list (hereafter anonymized with fictional names) looks like:

1. Kayitesi Philomene
2. Kazungu Venuste
3. Nkurunziza Emma-Marie

[...]

117. Gatete Andre

While she copies the names, I recall Marek's instructions: he said that the enumerators had to confirm with the village leader that every household was indeed still living in the village, by checking every name on the list. I ask Lorie: will she do it? She said that the village leader confirmed that the list was up-to-date. I wonder what would have happened if Marek was around to check on Lorie's work. Would have he insisted that she asks confirmation for every single name on the list? That would have been very cumbersome for her, and for the village leader, and maybe embarrassing. I notice that Lorie systematically corrects the spelling of the European names that are written phonetically. She changes Venusiti into Vénuste, Andere into André, Feligisi into Félix, etc. While Lorie writes, the others try to kill time. Rukundo finds a coin of 100 in his pocket and sends a child to the shop. The child comes back with two small packs of biscuits. Rukundo offers him to keep one, and he gives the other to a tiny boy, who does not even speak yet. Rukundo plays fondly with the toddler, provoking the amused comments of his colleagues. Nearby, two other male fieldworkers play with older children, and make them read from their schoolbooks. After a while, Rukundo decides to go and look for the village leader who has not returned. He asks a boy to take him to the village leader's house, and comes back after quite a long while. It turned out that the village leader did not actually have a written register. However, he said that he knew them all by heart and was able to dictate all the names to Rukundo, who copied them. Upon Rukundo's return, we leave and drive to a nearby health center, where we have an appointment with two other village leaders, who brought the registers with them. When were they notified of our visit? A lot of things happen over the phone. The fieldworkers spend quite some time over the phone and they all have small notebooks or pieces of paper on which they note phone numbers and names.

Bastian and Rukundo go greet the two village leaders. Lorie and Harry start to copy the lists. Meanwhile, Amandine copies Rukundo's list from the previous village: she thinks that his handwriting is not neat enough, and she noticed that he wrote the names phonetically. Like Lorie did before, she corrects the spelling of the names. She also keeps the irregular names (e.g. people who have only one name instead of two, the name with a meaning and the baptism name) for the end of the list.

At 1:30 pm, the enumerators have collected four lists out of the ten they were tasked to obtain. The fifth one is very easy to get: the village leader meets us somewhere on the road and hands us a sheet on which he had already copied all the names. One of the fieldworkers gives him 500 to pay for his moto-taxi ride back home. The same easy scenario repeats for the sixth village: the list is ready and the village leader passes it through the car window.

We are still driving around with the leader of the first village we stopped by: he stayed in the car and guided us. He finally jumps off the car – Harry discreetly gives him a 2,000 banknote. I wonder who eventually pays for these small amounts of money. Does EvaP eventually reimburse the enumerators for such expenditures? It is doubtful: this type of transaction does not end up with a proper invoice, and it takes place at the initiative of the fieldworker – on a side note I have only seen male fieldworkers distributing tips. Besides, EvaP had already paid a "communication and facilitation fee" to the village leader. These small payments can be regarded as tips. The fieldworkers occasionally pay villagers who help them in doing their work.♦

On that first step, the fieldworkers' task was relatively easy: they could take advantage of the existing administrative data and by the availability of the village leaders. The second step is way more cumbersome and requires a lot of efforts and manpower.

Listing day, November 2nd, 2016

Today is the first day of listing. The enumerators will conduct a census in the villages that were "mobilized" yesterday. Patrick, who normally works at the office and only rarely visits the field, is coming with us. He is one level higher than Marek in the hierarchy. His presence in the vehicle does not seem to make the enumerators shyer than usual though. Ingrid is even cockier than she normally is. She theatrically repeats, in English, that she hates her job, that she hates hiking up the hills and that she works only for the money. She is playing with the English pronunciation, and seems to be having fun testing different intonations.

In the car, Lorie starts to plan the operations. She brought several paper copies of the household register for the village of G. With her pen, and on each copy, Lorie divides the list into blocks of 20 names. In front of each block, she marks the name of one of the enumerators of the team. Each enumerator has 20 villagers to locate and register in the database. Lorie warns the enumerators: the names might be pronounced differently by the villagers: if it is written "André", "Philomène" or "Emma-Marie", the enumerators might need to ask for "Andere", "Fromene" or "Emamaliya".

When we arrive in the village of G., about 20 villagers are gathered for the compulsory monthly community work. Today, they maintain the dirt road. For the enumerators, this is a lucky circumstance: it is rare to find that many adults already gathered at the same place. People in G. look very poor, poorer than in other villages we have visited so far. They wear used, torn, dusty clothes, and most of them are barefooted. The

rooves of the houses are covered with tiles, and not with galvanized metal sheets as in the other places.

The village leader, who participates in the community work, asks for explanations about what the enumerators are doing. Lorie is uncomfortable – the fieldworkers are often afraid of explaining more than they should disclose according to their managers, or sometimes frustrated because they do not feel like answering the villagers' questions. Lorie speaks briefly, and from what I understand, in very general terms. She tells me afterwards that this is normally not part of her job: she thinks that Kianga should communicate with the villagers. I do not see why Kianga should communicate about the census, which belongs to the research component of the project – but Lorie's frustration indicates that she has no clear script to deal with the questions of the villagers, and no clear idea of what she can and cannot tell them about the census. After Lorie's explanations, the enumerators start to look for the villagers on their lists.

I stick with Ingrid. On the touch-screen tablets, a questionnaire called "listing" has been installed in the morning by the team supervisors. For each village, the list of household heads has already been entered. These lists were collected the day before in eight villages, which means that someone (probably Marek) entered 800 to 900 names last night, after a long day in the field. Each questionnaire is very short and takes less than five minutes to complete. The input mask displays questions in the following order and prompts the following actions:

1. The enumerator selects her/his own name
2. The enumerator selects the administrative units, from the largest to the smallest, to locate the village. (Province > District > Sector > Cell > Village)
3. The enumerator selects the name of the person in the list, and has the option to make corrections. The enumerator asks: "Are you Wimana Jean-Claude?"
4. The enumerator enters the date of birth of the person. Often, the villagers do not know their day and month of birth. The enumerator enters January 1st by default.
5. The enumerator asks if there are children under 18 living in the household[94].
6. Finally, the data collection software automatically attributes to each household a unique identifying code.

The day is very hot and G. is a steep, hilly village: the fieldworkers are rapidly exhausted. When Marek arrives, later on, from a neighboring village to check on Lorie's team, Patrick tells him that he finds the enumerators slow. Marek suggests to

[94] The enumerators were not trained at all to conduct this mini-questionnaire, which gave rise to some confusions. Ingrid asked an 80-year-old lady if she had children under 18, instead of asking if there were any in the household.

> stop the census after 120 households have been entered, even if this means that the remaining households will not be included in the lottery.♦

The census is an invasive operation: the enumerators go everywhere in the village, and try to locate every household head, by asking around. It is very demanding for them, and sometimes confusing for the villagers. The fieldworkers do not explain what they do, nor why they are doing it unless they have to. Some villagers refused to answer, fearing that they would later on be asked to pay taxes if they consented to give their names. Mobilization is based on very asymmetrical relations: the fieldworkers accumulate different ways to get hold of the villagers (phoning them, paying them, counting them, locating their houses, recording their names, etc.) but they are very reluctant to give the villagers ways to get hold of EvaP. They do not like to give explanations, because they are never sure of what they can or cannot disclose to the villagers[95]. The fieldworkers will come back, according to EvaP's schedule, but the villagers do not know how to contact EvaP. Mobilization very much consists in establishing one-way channels to the villages[96].

2.3. Data for lights: the unspoken agreement

In the previous subsection, I dealt with the enrollment of villagers into the experimental sample. In the present subsection, I focus more closely on the issue of the villagers' participation in the baseline survey. The questionnaire used for the baseline survey (on which I provide further details in the last section of the chapter) is long and cumbersome. It usually takes a couple of hours to complete. The fieldworkers' attempts at collecting data according to EvaP's timeline might go against the will (or simply, against the day-to-day schedule) of the villagers. Sometimes, respondents to demographic or experimental studies may be offered a small sum of money, or a gift in exchange for their time[97]. EvaP does not compensate the respondents. But most of the time, the villagers accept to be interviewed. This is not uncommon in African contexts according to demographers:

[95] Indeed, I remember Marek being frustrated at some enumerators who had said to the villagers that Kianga would give them free lights. "Don't mention anything about free lights!", he repeated adamantly the next day.

[96] I have once witnessed an exception. A respondent attempted at symmetrizing the situation by creating a way to get hold of EvaP. Marek was accompanying an enumerator named Octavia, and I was there too. When the three of us introduced ourselves, the lady brought a pen and a small cardboard invitation card. She wrote our three names on the back of the card. I think it did produce an effect on the way Marek and Octavia interacted with her. Marek took the time to explain what Kianga and EvaP are. Then, Octavia was careful to read the "voluntary participation" script *in extenso*.

[97] Cal Biruk discusses the ethics of offering soap to survey respondents in Malawi (Biruk, 2017).

> "This is where the personal skills of the interviewer are very important and a different set of power relations come into play: in some cases, illiterate, rural farmers may feel so intimidated by the well-dressed, well-educated interviewer that they do not think they can refuse to participate, but they may well demonstrate resistance by providing inaccurate replies." (Randall et al., 2013, p. 779)

Although the asymmetry between the fieldworkers and the villagers is sufficient to persuade people to answer the survey, it does not prevent some unpleasant interactions: some of the enumerators complain that respondents sometimes give them the stink-eye during the survey.

> "In other cases the interviewer has to use considerable persuasion to get people to participate, and often this takes the form of explaining the potential importance of the survey for future provision of services." (Randall et al., 2013, p. 779)

As Randall and colleagues note, sometimes the fieldworkers need to provide further arguments. In the case of demographic studies, the fieldworkers tend to explain the benefits of the survey in terms of the relevance and quality of future policies. Demographer Athanase Bopda, in a vivid and insightful article on the network of rural observatories in Cameroon, describes how this trick wears off in case of longitudinal studies, in which participants are interviewed on a regular basis for years on end (Bopda, 1998). He recounts how his team was faced with the discontent of villagers, who complained that after so many years of answering surveys, nothing had changed for them.

In the case of an RCT, the survey is not only linked with elusive future policies but also with present inputs. The problem thus becomes to convince people of the adequacy between the inputs they receive and the time and energy they give to participate in the survey. The articulation between the intervention component and the research component of RCT is complex. Sociologist Margarita Rayzberg shows that this articulation creates practical and ethical challenges for the randomistas (Rayzberg, 2018). To maintain a relationship with the control group despite the fact that no intervention is proposed to them, the researchers need to disentangle research from intervention. The framing[98] of the experiment must be different in the treatment group (entanglement between intervention and research is not a problem) and in the control group (intervention and research must be disentangled). For this purpose of achieving differential framings, the researchers use three different technologies. One of them, geographical separation between the treatment and control groups, is a "technology of opacity", aiming at obscuring the structure of the experiment to the participants. Two of them, temporal

[98] When using the notions of "framing" and "overflowing, Rayzberg refers the work of Michel Callon (Callon, 1998)

delay and public randomization ceremonies, are "technologies of transparency", aiming at justifying randomization as a fair process. Temporal delay consists in explaining to the participants that due to limited resources, the intervention will be phased-in gradually, meaning that some people will benefit from it before others, and that the recipients that will benefit from the program first will be selected in a random manner – interestingly, the author does not discuss the ethics of lying to the participants. Finally, the public randomization ceremonies consist in randomizing through a lottery, meant at showing to the participants that resources are attributed in a transparent way. In that last case, fairness is framed as equality of opportunity, even though the outcome of the lottery, by essence, creates unequal situations. Rayzberg shows that the framing is often overflowed, in two main manners. First, respondents in the control group may hear of the intervention despite geographical separation and hold the research team (instead of the implementing partner) responsible for the absence of intervention, defeating the attempt at disentangling research and intervention. Second, the researchers may experience guilt and regret, which also contributes to overflowing the framing they tried to create.

Let us come back on Rayzberg's analysis of the framing of the experiment: in the treatment group, the entanglement between intervention and research is not a problem, whereas in the control group, intervention and research must be disentangled. I would take this argument a little further and suggest that in the treatment group, the entanglement between intervention and research must be emphasized. That is what I term the unspoken agreement.

The case of backchecks is a particularly telling example to shed light on this informal "data for lights" deal. The backchecks epitomize the cumbersomeness and inconvenience of being surveyed. A proportion of the interviewees, randomly selected, are interviewed a second time, by presumably more experienced and more meticulous enumerators, who have been promoted as backcheckers[99]. The backcheckers use the exact same questionnaire as the enumerators, but they are regarded as being more reliable. Then, the field managers run a program that compares the original interview with the backcheck, which may lead to the detection of discrepancies – when the original interview and the backcheck differ too much, a third person can be sent to re-interview the respondent. If the field managers suspect a sloppy work or invented answers, they

[99] This is standard practice, recommended on the websites of JPAL and IPA, the largest two international organizations specialized in conducting RCTs.

may want to talk to the enumerator responsible for the interview. However, if no error is detected, it is perfectly indifferent to know who is responsible for which interview[100].

NA-1 (Nassima Abdelghafour): Can you tell me about the backchecks?

MFM-1 (Marek, Field Manager):The plan is that the backcheckers can do all villages that have been surveyed – but only for the randomized villages [*meaning, the villages randomized into the treatment group*], to see how the surveys went. So, it's just to have data that is uniform, just to see how good the enumerators are doing in the field, whether there are errors in the questionnaires, or the consistency of the answers. [The backckecks] just repeat the same questionnaire.

NA-2: Is it the *exact* same questionnaire?

[…]

NA-4: How do the micro-entrepreneurs react when they see people coming for the second time, or third time? Are they OK with that?

MFM-4: Not really, **they are not happy**. The other problem is, the questions, they are exactly the same. And as you saw, the questionnaire is very long, it takes over two hours, two and a half. So, to keep the child and the parent again… And they know the questions that you are about to ask, so it's normally very hard. **But we just have to… to inform them before, we just tell them the usefulness of this, huh… the benefits they get from giving the right information, that the policies will be right... and will become better for them in the future. So, yeah, we understand they are not very willing to answer to the backcheckers. It takes long and it's giving a lot of time – yeah, we see it, but the only thing we do is just to... to tell them about consent: 'ok, this is a research, we just need to have consistency and to see whether when you talked to the first person you forgot something and you think you can share it now.'** So, they just come in that mood and, ok, they can give us time. It takes longer because we now give them room to be free, like, whenever they want to go outside and come back. Because they're now used to how long the questionnaire takes. So, they're like: ok give me time, I first do my work. So, it delays… It takes long time compared to the first one, because they are now used to it. They can tell you: 'ok wait for us' or 'come in the afternoon.' So, they're not that happy, but at least when an enumerator is going to explain to them why they are coming back, they try to understand us. And if we are lucky now… [*so far*] **no one has refused any backchecker**. It means at least they understand it. And the other thing is that at least, they got the lights... We are doing backchecks to people who… **They were surveyed without the light, now they are having backcheck with a Kianga light, so… So, at least they just respond to us because they see results: 'when they surveyed us, we got lights, now they are coming to us again, so let's see what comes.'** ♦

[100] This anonymity is the lot of technicians, whose activity becomes invisible when things go smoothly (Heaton and Proulx, 2012 ; Shapin, 1989).

In MFM-1, Marek explains that backchecks are performed only in villages that were assigned to the treatment group, implying that it would be too difficult to convince someone who was surveyed a first time, and then assigned to the controlled group to be re-interviewed. The participants assigned to the control group have formed groups of micro-entrepreneurs, they have gathered money to pay the commitment fee, and they waited, in vain, for the creation of a micro-enterprise. Reciprocally, in MFM-4, Marek interprets the patience of the interviewees of the treatment group as the result of the hope that participating in another survey might bring them further resources. If EvaP does not create that hope by explicitly linking the willingness to participate in the survey with the distribution of material resources, the fieldworkers do not dissipate it either. The RCT brings lights and solar panels to the villages, together with the vague promise of better policies in the future.

2.4. Fieldwork: what happens in the interstices of the workday

The experimenters and their partners postulate that the creation of micro-enterprises will improve the lives of the off-grid villagers. In this vision of causality, the survey infrastructure is neutral. However, the arrival of young, educated, urban enumerators in off-grid villages located somewhere off a dirt road is not negligible. To back up this claim, it is necessary to describe what the enumerators do that is not directly related to their mission, all the mundane and ordinary things that arise in the interstices of the workday. To begin with, enumerators buy things when they are in the villages. Cellphone airtime, for example, may be found for sale on the roadside, under a yellow or blue umbrella, depending on the operator. The other frequent purchases are food items. Given the scarcity of the commodities available in remote villages, the enumerators seize all the occasions to buy a snack when they can find one. Milk, sodas, candies, bananas, biscuits in single-serve packaging or grilled corn, fill up empty stomachs in the car, between two villages[101]. Banana peels or empty milk plastic pouches are sometimes thrown out the car window, leaving a sparse trail of litter on EvaP's passage. Some enumerators (women in particular) always ask the driver to stop by the market if there is one on the way back to the capital city. The market might be a large covered marketplace with dozens of stands, at the junction of the paved road with the dirt paths, or, in its most minimal form, it might consist in one or two ladies selling a couple of different vegetables, piled up directly on the ground. Lorie and her colleagues often discuss the variations of the prices of foodstuff in the

[101] It is strongly taboo, for men in particular, to eat outside, in public places. For this reason, nobody packs any food or drink for the day.

capital city: the price of peas skyrocketed after a bad harvest, tomatoes have gotten more expensive, etc. While in the villages, Lorie and her female colleagues do not pass through the villages only as enumerators but also thrifty mothers hoping to save on their grocery shopping. Once, Lorie and her colleague Octavia bought and split ten pounds of sugar together, because it was cheaper to buy in large quantities. More unusual purchases include local products (e.g. wild honey harvested in the trees, traditional woven baskets sold by a village women's co-op) or leisure (Matthew the mobilizer once rented a bicycle to a villager just to kill time).

When the enumerators arrive in a village and get off the car, their first contact is often with curious children, with whom they happily interact. They play with the younger ones, and sit down in the grass to listen to children reading a passage from their textbook. Lorie, who has a five-year old son, cannot refrain from cringing when she spots a little boy with rotten teeth among a crowd of children. She kindly but firmly explains to the whole group that they need to clean their teeth every day. Through these short but frequent interactions, the enumerators promote certain education practices. One thing, for example, that enumerators can do with children, and that is most likely impossible for their parents, is the promotion and encouragement of English skills. I witnessed several English lesson performances, two of them were so striking that I consigned them in my field notes.

English lesson performance (1/2)

> Dozens of children were walking back from the primary school, with their uniforms all dusty from the dry dirt road. Boys and girls alike had a shaved head, which is mandatory for all pupils. Some were barefoot, and some wore the orange or green plastic sandals from China. They stopped and formed a circle around us, curious but silent. Jego, with his biggest smile, greets them in their mother tongue: children, how are you doing? They answer in unison, eyes down, in soft and meek voices. Is it how they address their schoolteacher? Jego spots a small little girl and invites her to step forward, in the center of the circle. He asks her name, and whispers something in her ear. The girl turns toward me and says "good morning", immediately provoking giggles of joy and comments from the other children. I make the stupid mistake of answering to her in the national language, unwittingly cutting short to a performance that had not come to an end yet. Jego saves the show: "say good morning!" he tells me. As soon as I do, the girl answers graciously: "how are you?" and concludes our little dialogue with a perfect "I am fine, thank you." I congratulate her, much to Jego's satisfaction. The English lesson was a rehearsal for the pupils, and a lesson for me. The schoolchildren show that they know how to greet a foreigner, and I learn how I must welcome this greeting in the politest way. Bringing them closer to me and me closer to them, Jego is a perfect mediator. Between two worlds – neither of which he inhabits. ♦

English lesson performance (2/2)

> Lorie's team is about to leave after a day distributing lights in a village. A young man approaches us, on two walking sticks. One of his legs looks paralyzed and his lips tremble a little when he speaks. Without hesitation, he looks me straight in the eye and thanked me, in a perfect English, for bringing awareness and electricity to the village. A small crowd of children and adults observes the scene. The young man asks my name, and where I come from. Embarrassed, I explain that I am not the one in charge, that I am just a student accompanying EvaP's enumerators. That did not temper his enthusiasm. He goes on and tells me how much he wants to get a higher education, how he always aims for excellence, praises hard work…
>
> In face of my incompetence, Ingrid, cocky as ever, brilliantly takes over. She answers in English, in a loud voice for everyone around to hear, that one of her brothers is like him [handicapped], and that he is the cleverest among all the siblings. She congratulates him at length for his commitment and his ambition. She stages him as a smart young man, perfectly able to have a conversation in English.♦

These English performances provide a clue to understanding what the enumerators do when they visit a village, besides to conducting surveys. They bring with them the English language, which is also the language used in secondary school and in part of the formal economy.

Mobilization consists in various strategies aimed at rendering the villagers available for the experiment. These strategies can be calculated or spontaneous, straightforward or deceitful, but all of them share a common point: they take advantage of the villagers' deprivation and lack of opportunities. The experiment gives the villagers a taste of what development could bring – solar lights, English speaking, electronic devices. It is also a way for the villagers to access material resources that they lack[102]. Ironically, the global inequality that makes it possible for a research consortium to spend a $1.7 million on a research project on extremely poor subjects is precisely one of the blind spots of RCT.

[102] The fact that poverty might be a condition of possibility of the implementation of RCT is not discussed within the RCT epistemic community. "Finally, nearly all the studies used impoverished participants, but no study discussed whether penury compelled people to participate." (Hoffmann, 2020). In an even more dramatic manner, the clinical trials held in poor countries sometimes represent the only way for patient to get a treatment (Nguyen, 2010).

Section 3: Interviewing the villagers: producing anchored fictions

3.1. Data collection is crucial in RCT

3.1.1. Precious data

Custom data is a defining component of RCT: the data collected by the enumerators is compiled into the dataset on which the economists perform their analyses. Economists practicing RCTs often stress the dichotomy between "observational studies"[103], meaning econometric studies based on "observational data", and randomized experiments, based on custom, experimental data. The following quote is taken from the *Handbook of Field Experiments in Economics*, a two-volume textbook edited by Esther Duflo and Abhijit Banerjee, two prominent and founding figures of the RCT movement.

> "In many experimental studies, […] the number of units on which data need to be collected to assess the impact of the program does not have to be very large and that data are typically collected especially for the purpose of the experiment. Elaborate and expensive measurement of outcomes is then easier to afford than in the context of a large multipurpose household or firm survey. By contrast, observational studies must often rely on identification on variation (policy changes, market-induced variation, natural variation, supply shocks, etc.) that cover large populations, requiring the use of a large dataset often not collected for a specific purpose. This makes it more difficult to fine-tune the measurement to the specific question at hand." (Banerjee and Duflo, 2017a, p. 12)

According to Banerjee and Duflo, the small sample size needed for RCTs allows for more innovative and sophisticated measurement techniques, tailored to the specific needs of each research project. On the contrary, they argue, observational studies are stuck with estimating the impact of macroeconomic variations with basic before/after comparisons, using more rudimentary data from general-purpose datasets. More generally, in experiments, researchers compare data collected right before and soon after the introduction of the program under evaluation, whereas researchers using observational data cannot control the frequency of data collection. The most common and strongest argument of RCT-proponents (only minimally mentioned in the above-quoted passage) to distinguish RCT from observational studies is the

[103] Often also called "non-experimental studies" in the writings of RCT-proponents, which makes clear that they have turned experiments into a methodological reference and regarded other methods as lacking experimental rigor.

fact that RCT uses a sophisticated counterfactual to identify causality: data is broken down between a treatment and a control group, allowing for finer comparisons. This latter point, makes it very important for economists practicing RCT to produce their own data, which distinguishes them from most other economists.

> "Datasets are the single most valuable (and most expensive) outputs of our research. If an evaluation costs one million dollars, shouldn't we value the underlying dataset at one million dollars as well?"

The above citation of Prathap Kasina, the regional director for Innovation for Poverty Action[104], is used as an opening to the website page dedicated to the security, storage and treatment of data[105]. The question that guides this chapter is how exactly, and at which cost, this precious data is produced. Investigating how data is produced leads me to questioning RCT-proponents' "metrological realism" (Desrosières, 2001, 2013), in the wake of economist Agnès Labrousse, commenting on Esther Duflo's methodology:

> "The realism supported by Duflo is akin to a naive 'metrological realism' as defined by Desrosières (2008), in which quantification is seen as merely mirroring reality within a margin of error […]. Duflo underlines the objectivity and rightness of the scientist applying sound techniques – which contrasts with the lack of information and the restrained horizon of local actors" (Labrousse, 2016, pp. 295–296)

Metrological realism refers to an epistemology inherited from the natural sciences: facts exist before (and independently from) the scientists who observe and measure them. This position postulates that there is such a thing as a "true" measurement, and the researchers try to get as close as possible to this true value. Metrological realism is associated with a lack of reflexivity about the instruments enabling data collection, and about the categories structuring the questionnaire. My account of how the enumerators use the questionnaire to survey the respondents challenges this metrological realism. I argue that rather than capturing a preexisting reality, and preexisting facts, the enumerators, together with the respondents, produce anchored fictions: this is the best that they can do to fill in the cases of the questionnaire.

3.1.2. Anchored fictions

This section describes the interviews conducted during the baseline survey and proposes the notion of "anchored fictions" to qualify the data produced through these interviews. This

[104] Reminder: with the J-PAL, Innovations for Poverty Action is one of the world largest organization specialized in implementing RCTs.

[105] https://www.povertyactionlab.org/fr/research-resources/working-with-data

interview campaign is based on a long questionnaire, composed of 20 different modules. It was conceived to answer a particular set of problems defined far away from the villages, and shaped by economic theories. The questionnaire also reflects the interests and agendas of a network of partners taking part in the experiment or funding it. The questionnaire is, to a certain extent, a standard instrument, resembling other questionnaires used in demographic studies in the developing world. But it is also very particular and tailored to the issues researched in the Kianga Energy experiment. However, the questionnaire is not written for the particular places where it is used. The absence of prior work to adapt the questionnaire to the villages of the experiment considerably complicates the task of the enumerators.

This section describes the questionnaire used for the survey and the situations of face-to-face interviews. Equipped with a questionnaire that is very impracticable, and faced with villagers whose everyday experience does not fit in the questionnaire, the fieldworkers resort to a form of intelligence that Ancient Greeks called metis[106] (Détienne and Vernant, 2009).

> "In the first place the type of intelligence we are attempting to define operates on many different levels. These are as different from each other as are […] a hunting trap, a fishing net, the skills of a basket-maker, of a weaver, of a carpenter, the mastery of a navigator, the flair of a politician, the experienced eye of a doctor, the tricks of a crafty character such as Odysseus, the back tracking of a fox, and the polymorphism of an octopus , the solving of enigma and riddles, and the beguiling rhetorical illusions of the sophists. […] There is no doubt that metis is a type of intelligence and of thought, a way of knowing; it implies a complex but very coherent body of mental attitudes and intellectual behaviors which combine flair, wisdom, forethought, subtlety of mind, deception, resourcefulness, vigilance, opportunism, various skills, and experience acquired over the years. It is applied to situations which are transient, shifting, disconcerting and ambiguous, situations which do not lend themselves to precise measurement, exact calculation or rigorous logic." (Detienne and Vernant, 1991, pp. 2–4)

The concept of metis seems relevant to describe what is needed for enumerators to perform their jobs: an attention to details, a sense of the right timing (*Kairos*), a mix of tricks and diplomacy. They manipulate questions or categories that may turn absurd, confusing or tactless in situation. Faced with the difficulty of using the questionnaire, they strive to collect data no matter what – which means that they have to invent some of the answers. They do it in a very

[106] Political scientist James C. Scott used the concept of metis to oppose the modernist ambition of states to make places legible to the adaptability, know-how and practical knowledge of smaller actors (Scott, 1998).

professional mindset. Their inventions are solidly anchored in the village, but flexible enough to fit in the cells of the cumbersome questionnaire.

I propose the notion of anchored fiction to qualify the data collected by the fieldworkers. The awkwardness of the questions and categories used in the survey questionnaire forces the fieldworkers to invent part of what they fill in the questionnaire (Biruk, 2018). But they do it in such a professional way that they anchor their invented data to the many clues they collect by observing the surroundings, engaging with the villagers, and relying on all the resources and specific expertise they may have to produce a plausible guess. By so doing, they bridge the gap between the out-of-place questionnaire they use and the villages they survey. Let us imagine that each answer is a helium balloon, or any other floating object the reader might fancy. The fictive answers produced by the enumerators are not floating freely and randomly above the village sky. They do not derive to disappear completely from sight. They are not made up by lazy enumerators sitting under a eucalyptus tree by themselves rather than hiking up the hill to speak with an interviewee. They are tied to some material anchor in the ground, somewhere in the village, somewhere in the house of the interviewee. They are attached to that anchor with a rope, a rope of intuition, calculation, logic, extrapolation and informed guess. Let us note that inventions may also come from a respondent confused by the question, or reluctant to answer, or wary of what his/her answers might be used for: the anchor may also work as a precaution against the villagers' imagination. The rope is also a rope of plausibility, common sense and sometimes, distrust. Co-producing the answer with the interviewee might consist in filling in a blank, but it might also mean checking what the person says against contradictory clues and experience of how things normally work in the village. Of course, there is a light breeze blowing in the data collection sky, and the balloon floats around a little: this is the part of guess, forgetfulness, the part of arbitrary decision made by the enumerator.

On the basis of these anchored fictions, co-produced by the enumerators and the interviewees, and eventually compiled in a dataset, a form of political representation is built. Indeed, up the chain, the experimenters draw the legitimacy to express claims and concerns about the poor from their accumulated knowledge of the villagers. Which claims would the villagers express if it was up to them? Which claims would the enumerators express if it was up to them?

Finally, these interviews provide many occasions of friction, in the sense developed by Anna Tsing (2005). Through the interview, worlds meet in a mutual trying process. The questionnaire is put to the test: does it make sense, do people consent to answer? The interviewees are put to the test: do they understand, are they able to answer? What does it tell them about their own

situation? For a couple of hours, the villagers are exposed to exotic categories, ways of thinking, calculating and ranking. As for the enumerators, when they complete an interview, they are exhausted. What does it do to have to ask these questions? What does it do to be asked these questions, in this experimental situation?

There is a budding literature on RCT fieldwork (Jatteau, 2014 ; Quentin and Guérin, 2013 ; Rayzberg, 2018), but little of it is dedicated to the face-to-face interview situations. Nonetheless, the activity of enumerators in other contexts has been examined in the literature in social sciences. Some of these works take the form of a reflexive feedback on the conditions of a statistical survey. They aim at improving the survey process and the quality of the data collected (Bessière and Houseaux, 1997 ; Levinson, 2016 ; Memmi and Arduin, 1999 ; Régnier-Loilier, 2007). Some authors call for a more flexible division of labor between the principal investigators and the enumerators (Gobo, 2006 ; Peneff, 1988). They argue that enumerators should be granted a greater autonomy in order to be able to produce better data. Finally, the practice of making up data (in French, "*bidonnage*") is analyzed in the light of the enumerators' working conditions, which are often particularly demanding (Caveng, 2012).

My research, however, is neither concerned by the quality of the data, nor by the reliability of the results of the experiment. As explained in the introduction, I try to build a perspective that is orthogonal to the experimenters' project. The principal investigators of the Kianga Energy Research Project study the impact of the creation of micro-enterprises distributing, according to various modalities, solar lanterns in off-grid villages. I do not attempt at assessing the quality of the experimenters' work. Rather, this chapter takes as its object the whole infrastructure dedicated to collect data, that is an unquestioned instrument for the principal investigators. I attempt at rendering the thickness of a process that is completely flattened in the publications following RCTs. The long weeks spent by the enumerators hiking up and down the hills, touch screen tablet and blue pen in the hand, end up condensed in a few figures and indications: that many entrepreneurs interviewed, in that many villages, located in such and such districts, between this and that date. The material process of the survey, with its load of inconsistency, flukes and glitches, with its successive renegotiations, ends up being overwritten in the end (Quentin and Guérin, 2013).

3.2. Two interviews by an experienced enumerator

The questions of this chapter may be orthogonal to those of the principal investigators, they are however strongly colored by the preoccupations and analyzes of the fieldworkers. Let us shadow one of them, the time of an afternoon.

Baseline survey, northern district, October 20th, 2016

The driver has parked his vehicle at the "center" of the village, the place in the village that most resembles a street. The dirt road is flatter, larger, and lined with small buildings: mom-and-pop shops with sparsely stocked shelves, taverns selling locally brewed banana beer in yellow jerricans. There are also a lot of houses that are apparently vacant: the windows are shut and the doors locked. The rare houses with painted walls wear the colors and logos of a cellphone operator, or of a famous beer brand.

A tall man wearing a polo shirt walks towards us: he is one of the four potential[107] micro-entrepreneurs of the village. After the usual greetings, Lucien-Victor, an experienced enumerator, and Marek, the field manager, follow the man to his house, on a narrow and craggy path. Lucien-Victor jokes on the way: people should improve this path during the next community work session[108]! When we arrive, the small mud block house is closed: nobody is home. Our host goes behind the house, enters by the back door and opens the front door for us. In the yard, yams have been put to dry on a mat. Inside, on the dirt floor, there is some wooden furniture: a coffee table flanked by two low banks and a wooden chair. Three white plastic chairs are piled up in a corner. I notice two small blue glass windows in the wall: it is quite unusual to see glass window in the villages. Often, there are only wooden shutters. Except for the sparse furniture, the room is barren. In the back, there is a curtained door: I imagine that all the objects (the tubs, buckets, knives and pots, the tools and the soap) are there, behind the curtain, in the backroom. A woman soon arrives from behind that curtain. She shakes our hands, her left hand resting on the bend of her right elbow as a mark of respect, and disappears behind the curtain. The front room seems to be dedicated to receiving guests.

Marek speaks first. He briefly explains, in quite vague terms, that he and Lucien-Victor work for a research project conducted by EvaP. He spells: "E-V-A-P", without explaining the meaning of the acronym. When he is done talking, Marek sits apart, and starts to discreetly work on his laptop. He does not particularly pay attention to the interview, occasionally goes to the front yard to use his phone, and leaves discreetly before the interview is over.

[107] Potential because randomization does not take place until the baseline survey has been completed.

[108] This refers to the day of the month when it is mandatory for every household to send one person to participate in community maintenance work.

Like Marek, we will occasionally exit the room to comment on what happens inside.

> Lucien-Victor turns the touch-screen tablet on and opens the data collection software client. A list of several questionnaires appears on the screen, and he selects the one entitled "baseline survey". Then, Lucien-Victor selects his own name among a long list: all the enumerators working on the Kianga Energy project are registered. Each interview can be traced back to the enumerator who conducted it. This is especially useful for the managers in case of "backcheck". The next lists appearing on the screen display the different administrative units, from the largest (the province) to the smallest (the village) in order to geographically locate the interview in the village where it takes place. Finally, a short paragraph appears on the screen: the enumerator is supposed to read it out loud in order to obtain the informed consent of the interviewee. Lucien-Victor, instead of reading it extensively, sums it up in one sentence. Then, he explains to the respondent that the last section of the questionnaire is targeted at a child aged 11 to 18 living in the household, and preferably a girl. He asks if there is a teenage girl available to answer, and requests that she stays around.
>
> The first module of the questionnaire is a roster listing all the people living in the household, and recording their age, date of birth, marital status and education level. At last, we learn the name of our host: Leonard. Leonard recites the names of his family members.

Each person is designated with two names: the first one, in the language of the country, has a meaning. The second name is a baptism name: names like Immaculata or Jean-Bosco are typically borne by Catholics. Other European names, often old-fashioned, are usually borne by Christians from one of the many denominations that exist in the country. Arabic names are used in Muslim families. The use of patronyms that are common to siblings and passed on from one generation to the next is extremely rare.

> When prompting Leonard, Lucien-Victor uses the second names of the family members, the European (baptism) names. He takes great care to pronounce them in the local manner. If the name finishes on a consonant, he bounces on it and adds a little "ee" or "a". The R and L are indistinct, merged into a soft, rolled sound. But Leonard, when he calls out to his spouse to ask her the age of their children, uses the first names. He also uses the first names when he answers to Lucien-Victor. Frowning impatiently, Lucien-Victor systematically asks the confirmation of the European name of the person. For the dates of birth, Lucien-Victor enters January 1st, by default: Leonard only remembers the years. Soon, Lucien-Victor asks Leonard if the family has social security cards. Leonard readily rushes out of the room and come back with blue laminated cards in his hand. Lucien-Victor examines them one by one and checks the information Leonard gave him. He pauses and turns to me to explain: Leonard remember when his wife was born, but he does not know how to deduct her age.

> Lucien-Victor grabs his phone, and shows to Leonard how he can find the age of his wife by subtracting her year of birth to the current year.

Let us pause here. The very first questions of the interview are not as trivial as one could expect. In the enumerators' experience, it is very usual for fathers to ignore the dates of birth of their children, whereas mothers normally remember this information. For this reason, when they interview a man, the enumerators often ask if his wife could stay around and help in the beginning of the interview. The enumerator, faced with the interviewee's forgetfulness, multiplies the potential memory aids: the spouse, the social security cards. Faced with the interviewee's low numeracy skills, the enumerator helps him make the calculation. The enumerator does much more than enumerating questions and entering the answer of the interviewee. The enumerator *answers with* the respondent.

The simplest questions are sometimes the trickiest. Leonard reports a daughter named Claudine. The interview includes a module, in the end, which is no longer addressed to the household head, but to a child, aged 11 to 18, and preferably a girl. Leonard calls his daughter Claudine to answer this module, and leaves the room. Soon, Lucien-Victor discovers that Claudine's name is in fact Sandrine. Taken aback, he asks who Claudine is, then. According to the young girl, there is no Claudine in the household, which means that Leonard did not mistook one daughter for another: he came up with a completely different name for his daughter. This may sound absurd, but once again, this is not that unusual. In some families, the European or Arabic name is not really in use: people prefer to use the African first name, or nicknames. Despite the efforts of the enumerators to pronounce the European names in the local manner, sometimes these names simply do not belong in the day-to-day life.

> After the roster, the questionnaire continues with a series of questions about the household's access to various lighting sources. Then come three modules aimed at evaluating the economic situation of the household: assets, income sources and saving practices, non-food expenditures and food expenditures. On the touch-screen tablet, Lucien-Victor often switches from the national language version of the questions to the original English version: he explains that the translation is not always clear and that he needs to check the English question to be sure. Once again, the enumerator does not enumerate: he enriches his understanding of the question by reading it in both languages and reformulates it for Leonard. These modules, dedicated to establishing the household's budget, are usually very trying, both for the enumerators and for the respondents. The questions require not only an important and detailed memory effort, but also some numeracy skills. For instance, to find the past month's income of the household, Leonard must add the incomes earned by the different family members, and the product of the sale of agricultural crops. The same thing goes for the

> consumption of food items. For instance, let us consider the following question: "During the last 7 days, did household members consume vegetables (tomato/ onion/ garlic/ pepper/ pumpkin/ cucumber/ eggplant/ carrot/ leeks/ lettuce/ celery/ parsley/ mushrooms/ amaranth [small leafed greens])." If the answer is yes, then the respondent is also asked how much the household spent on vegetables during the last 7 days. Leonard needs to remember if any of these vegetables were consumed, in which quantity, and at which price they were bought. Then, the different amounts need to be added, in order to finally yield an estimate of the total amount spent of vegetables. Lucien-Victor helps Leonard along the process, and makes all the additions on the calculator of his cellphone.

Some individual questions, such as in the above example, create small challenges. But the biggest difficulty for the enumerators is to deal with inconsistencies across questions. Often, the respondents firmly assert that they have earned no income at all, or report a very low amount. But later on, they list some expenses exceeding their income.

> Lucien-Victor remarks inconsistencies between the amounts spent by Leonard and the income he stated earlier. He points out the contradiction to Leonard. Then, he swipes back to the income module and asks some questions again, hoping to obtain a more plausible answer. These sequences repeatedly occur, creating a visible frustration for both the interviewee – who likes to be caught out? – and the enumerator. At some point, a nervous laughter interrupts the monotony of the interview. When Lucien-Victor asks what the household spent in root tubers during the last 7 days, he exclaims: "at least you cannot lie about the cassava, I have seen it drying outside of your house!"

Let us pause here once again. The enumerators do not only help the interviewees to answer complex questions, and check the consistency of the different answers; they also check the plausibility of the answers against the material clues that they spot around them[109]. For instance, many of them obtained their undergraduate diploma in agronomy. One of the team supervisors, Amandine, once commented on a sad, dried out field of beans, on the side of the dirt road. She looked at the field and estimated the yield and the quality of the crop. Just by eyeballing the field, she gets the idea that the times are tough: this is one material clue that complements her understanding of the village.

> After 40 minutes, both Lucien-Victor and Leonard start to look frustrated and tired. Lucien-Victor sighs, Leonard cannot sit still and keeps fidgeting on his seat. They both struggle to keep focusing. Lucien-Victor adapts the questionnaire to the situation. For instance, he refrains from asking a particular set of questions that could be qualified as

[109] Or against their own common sense. On a different day and in a different interview, while completing the time schedule module of the questionnaire, Lucien-Victor is startled when the interviewee says that he worships between 6 pm and midnight. He asks the respondent which church he goes to, and turns towards me: "do you think a catholic mass can really last for six hours?!"

> out-of-place questions: they might be very benign in other contexts, but they become potentially offending in the off-grid villages where the experiment is implemented. For instance, Lucien-Victor does not ask if the members of the household have consumed cheese, or food from the restaurant. He knows the answer and enters it without reading the question to Leonard. For the exact same reasons, he does not either ask how much time the household members have spent watching TV or surfing on the internet.

Most enumerators I have shadowed apply the same type of censorship when they use the questionnaire. They know that the villagers cannot afford these things: it would be not only a waste of time, but also shocking to ask.

> After one hour and a half of efforts, Lucien-Victor and Leonard reach the end of the main questionnaire. The last part of the questionnaire is to be answered by a female teenager living in the household. It includes modules dedicated to the time-schedule, health status and aspirations for the future. Then, the teenager is asked to react (agree or disagree) to a series of assertions about gender equality. Finally, the last module pertains to school attendance, homework and the use of lighting in this context. Leonard calls one of his daughters. A 16-year-old girl comes in and sits where her father was the minute before. It does not start off on a good footing: soon, Lucien-Victor discovers, appalled, that the girl's name is not Claudine, but Sandrine. He goes back to the roster and corrects her name. The rest of the interview is laborious. Sandrine is extremely shy: she keeps her eyes to the floor and barely answers. She does not utter words but nods or mutters softly to say yes. Lucien-Victor adopts a more proactive attitude. He suggests her the answers, and waits until she nods, which he interprets as a yes. If she remains quiet, he selects the option "does not know". Once and again, he just picks the answer himself and moves on to the next question. When the interview is over, Lucien-Victor is drained. We say goodbye to the family and leave.
>
> While we walk towards the next respondent, Lucien-Victor and I debrief the interview. I am walking on egg shells: I do not know how to start to preserve Lucien-Victor's last bit of patience. I start by noticing that some questions are complicated. Vehemently, he retorts that the problem does not come from the questionnaire, but from people, who are too slow, who cannot think fast and give answers that make sense. He says that they are not even able to admit that they do not know. He adds that even people who understand everything are not always willing to answer, and complains about people who lie.
>
> I ask him about the difficulties related to the translation of the question from English to the language of the country. Once again, he vigorously protests: it is not a problem of faulty translation. "The person who wrote the questionnaire, he wrote it from where he stands. He did not think of how the questionnaire would work here, with the population." Equipped with a questionnaire that is very difficult to use, imperfectly translated from English and nosy, and faced with villagers who sometimes struggle to understand the questions, and who are sometimes reluctant to answer, Lucien-Victor must complete the interviews, in spite of everything. Lucien-Victor comments on one

> of the questions he had to ask the teenage girl. In the "aspirations for the future" module, there is one question about the future wage. "What do you expect to be your typical take-home monthly wage for when you have finished studying and have a full-time job?" As Lucien-Victor underlines, everything in the question is absurd, seen from the village. Who, in the village holds a formal employment? She probably never met someone who earns a monthly wage. "She could even say… 5,000, and think that it is a lot of money!" he exclaims, very irritated. Lucien-Victor tells me that he really struggles so that the respondents give him "the answers that [he] want[s]".

Is Lucien-Victor cooking the data? What type of answers does he "want"? He wants answers that make sense to him, that are consistent with one another, and consistent with his experience of the village. The difficulty is to create a contact zone between the questionnaire, which comes from afar and the villagers, who are (desperately) local. When the enumerator reformulates or withholds questions, he brings the questionnaire closer to the villagers. When he answers with or even instead of the villagers, he brings them closer to the questionnaire[110]. Lucien-Victor and his colleagues strive to construct answers that are relevant in the framework of the questionnaire, even if this means producing fictions.

> Liévin, the second respondent, meets us at the center of the village and shows us the way to his house. Over the course of the second interview, Lucien-Victor frequently turns towards me to comment on the difficulties that arise, as if he wanted to exemplify once again the challenges he described earlier. This time, contrary to Léonard, Liévin is talkative. When he is asked how many wax candles he and his household used during the last month, he complains at length about a rise in the market price of candles. Later on, when Lucien-Victor has reached the "well-being" module, he asks Liévin to react to the statement: "Last night, my sleep was agitated." The answers suggested in the questionnaire are "never or rarely", "sometimes", "often", or "all the time". But Liévin is not concise, he explains the reasons for his insomnia. He explains that being the village leader is stressful, and that worries keep him awake at night. Liévin answers as if we were having an ordinary conversation, which slows down the interview and frustrates Lucien-Victor. But after all, two strangers are sitting in his house, and one of them is asking about his sleep and his psychological well-being: it is not absurd that Liévin would get talkative, especially if he is not familiar with the type of interactions required in a structured interview. The enumerators have various strategies to deal with a chatty respondent. Some of them wait silently while compulsively checking the time on their phones, others feel free to interrupt and move on to the next question. Lucien-Victor, noticing that Liévin is getting sleepy and distracted, proposes to take a short break. We accompany Liévin outside and tour his compound, we stop to watch his

[110] The enumerators employed by the water utility company, described in Richard Rottenburg's book *Far-fetched Facts*, are also confronted with a gap between the questionnaire and the respondents, but they choose a different strategy. They note exactly what the respondent tells them, even if the answer does not fit in the categories of the questionnaire (Rottenburg, 2009a).

> cow, which is a nice and polite thing to do: villagers who possess cows are usually very proud of it.
>
> We come back inside. The following questions, in the "wellbeing" module, present further difficulties. For instance, several questions use scales. For example, general life satisfaction, happiness or anxiety are measured by asking the respondent to place himself on a scale where 1 represents the lowest level (of satisfaction, happiness or anxiety) and 10 the highest level. Liévin is lost, this numerical scale does not make sense to him at all. Lucien-Victor modifies the question, and simply asks Liévin how satisfied he feels. According to the respondent's answer and intonation, Liévin estimates where Liévin stands on the numerical scale.

Anthropologist Cal Biruk describes a material alternative to using an abstract numerical scale with respondents (Biruk, 2018, p. 138). In a demographic survey taking place in Malawi, respondents are asked to move beans from one small plate to another, to express how likely they deem a certain number of statements (e.g. "how likely you think that your spouse is infected with HIV/AIDS now.") The enumerators were asked to mark the number of beans moved by the respondents in the blank space of the questionnaire. The researchers who came up with the idea of the beans were hopeful that they would provide an intuitive and visual way to translate the concept of probability for a population with low numeracy skills. But the Malawian respondents would most of the time feel offended, and tell the enumerators to go with the children if they felt like playing silly games.

> Finally, when Liévin's 13-year-old daughter enters the house to answer to the last part of the questionnaire, Lucien-Victor tells me: "you'll see, this one will be brighter than the other girl!" He draws my attention to one detail: her head is shaved, which means that she still attends school. The minute she entered the room, Lucien-Victor assessed her and adjusted his expectations accordingly.♦

The two interviews performed by Lucien-Victor illustrate the importance of the enumerators' work. They not only produce anchored fictions, but they also bear the brunt of the emotional distress created by the interview situation. Whereas they must muster their own resources (patience, concentration) to go through the questionnaire, they also try to soften the questionnaire, so as to make the interview a little easier for the respondents.

3.3. The diplomacy of the enumerators

One of the responses to the friction created by the questionnaire is diplomacy. Enumerators learn to negotiate the interviews by modifying, adapting, and even censoring the questionnaire.

These skills are not specific to RCT, but seem to apply to various survey situations – and to be accentuated by cultural distance.

> "Interviewers in African surveys have a very difficult job. They have to negotiate entering people's private lives in ways that may be very alien to local cultures. They have to apply and adapt definitions to complex contexts either for which criteria have not been developed, or where criteria are contradictory, and where even the examples given during training may confuse the situation. Furthermore they are often caught between two different value systems: their professional position and their role as a culturally attuned member of their society. The former requires them to ask questions in a specific way, often on subjects which are rarely spoken about openly and where power relations between interviewee and interviewer may influence acceptable responses in different, but unknown ways." (Randall et al., 2013, p. 784)

3.3.1. On lying respondents

The issues of lying and dissimulation often arise: enumerators complain that respondents lie to them, or voluntarily retain some information. The questionnaire can be regarded as intrusive. It covers many aspects of life, including health status (e.g. has anyone in the household suffered from intestinal worm infestation?), psychological well-being (e.g. did the respondent feel happy, lonely or depressed the day before?). Some villagers sometimes lose patience and question the relevance of such information with regards to the nature of the experiment: what does it have to do with solar lights?[111] Reciprocally, the enumerators are sometimes frustrated at lying respondents. The enumerators often sense when respondents are telling a lie. Lucien-Victor, during the interview recounted above, semi-playfully warned the respondent "at least you cannot lie about the cassava, I have seen it drying outside of your house!" Other enumerators complained about the fact that respondents sometimes pretend not to understand the question, or say that they do not know what to answer when they feel reluctant to disclose some information. Biruk (2012) mentions similar issues in her observation of a demographic survey in Malawi. Enumerators sense lies and insist until they obtain an answer that sounds plausible enough to them. In the case described by Biruk, the respondent first said she had not lent any money over the past year. That seemed very unlikely to the enumerator, who insisted. Finally, the respondent recalled several occasions when she loaned money to friends and relatives. Similarly, the respondent first said that she did not remember her children's dates of birth. Only after the enumerator insisted, she consented to share the information.

[111] This raises again the question of the adequacy between the research and intervention components of the experiment, which was treated in the previous section.

The issue of lying informants, more generally, has been tackled by medical anthropologist Sjaak van der Geest (Bleek, 1987 ; Geest, 2018), who contends that using questionnaires to investigate delicate issues forces respondents into lying to preserve their privacy (or otherwise protecting themselves and their own interests in the interaction) without frontally clashing with the interviewer. He was serendipitously able to compare the answers to a questionnaire of several respondents with the ethnographic data he had collected on them. He was researching sexual behaviors and abortion (which was considered a crime at the time of his fieldwork) in the town of Kwahu, Ghana. Compelled by his more senior colleagues to produce a quantitative analysis rather than relying solely on the qualitative data collected on 42 adults from one same lineage, he hired 6 hospital nurses to survey the women attending prenatal medical visits. When reading through the questionnaires, he discovered that he knew six of the respondents from his participant observation. He was astonished by the extent to which these respondents had lied to the nurses-surveyors. The six respondents tended to answer the nurses so as to present themselves as respectable women: they said that they were married when they were not, underreported the number of abortions they had, etc. The author insists that the lying of the respondents results from the interrogation technique chosen by the researcher. Anthropologist Frank Salamone (1977) discusses lying informants not only in the case of structured interviews and quantitative surveys but also in the more general framework of anthropological fieldwork: lying is not only produced by questionnaires but also by any form of anthropological investigation. More importantly, lying also provides information if analyzed as part of an interaction between the informant and the ethnographer. What does the informant try to protect when lying? How are they protecting their interest in the interaction? Lying can be regarded as a normal, routine part of any survey – enumerators occasionally lie to ease situations, and respondents occasionally lie to keep some control over the interaction.

3.3.2. On shocking questions

Other types of challenging reactions to the survey include being shocked or visibly displeased with a question. Marek develops the example of the questions regarding food consumption, and especially, a question about cheese consumption. Cheese is an imported, expensive food, extremely unlikely to be found in a poor rural household's pantry. In the questionnaire, the question reads: "during the last 7 days, did household members consume milk derivatives (yogurt, cheese, etc.)".

NA-1 (Nassima Abdelghafour): In the questionnaire of the Kianga project, which questions are difficult for people? Like, what are the questions that always create problems, misunderstandings?

MFM-1 (Marek, Field Manager): Depending on the questionnaire, there are some questions that they find **too personal**. Like, if you follow the Kianga project questionnaire, there are these food [questions]. […] You are in the village and, OK: **"did you eat cheese?", "do you eat..." and we have to ask the questions, because the way we ask the questions should be universal, wherever we are asking, we need to ask that specific question**, so... Yeah, there are those like, food [questions]… "what did you eat last week?", "what did you eat yesterday?", "do you eat this?" […] The other one is [the question on] life expectation: "will you be alive at 60?", "will you be alive at 30?", will you be at 40, will you be at 70... yeah. So, those are just questions… **when you ask them to people**, you are not sure whether they are unhappy with the questions, but they are… **They are shocked by the question**.

NA-2: I imagine, because even I… When I read that question for the first time, I was a little bit like… [nervous laugh] wow, that's a… difficult question.

MFM-2: You saw it? You saw that question? On life expectation?

NA-3: Yeah, for kids, right?

MFM-3: Yeah, for kids, yeah. So, some of them, they just look at you… like strange, like "what kind of question is this? How do you ask me where I will be at 40?" How do you determine, how do you tell? Some are like: "Why do you want to know if I will be alive or dead or something?" So... Yeah, from the Kianga questionnaire those are the questions that… people are a bit... not used to.

NA-4: But for example, the question "did you eat cheese" … In the villages like in R…, for example, it's very unlikely that people will eat cheese... But you still have to… ask everything? [MFM nods a yes] OK. But for example, in the schedule question, there is one: "did you surf on the internet or watch TV". But it's very unlikely that people watch TV or surf on the internet, so you still have to…?

MFM-4: [We] cannot assume that "OK, from what we see, from our observations, these people did not eat cheese". But it depends. […] so, if the question is "did you eat cheese", we just say "did you eat cheese". At least… The person may not have eaten cheese, but if they did not ask you "what is cheese?". **It means at least they know cheese.** but like, at that time they did not eat cheese. So, […] the questions come, we know it is a bit touchy to some and they are not happy with it but... you phrase it in a good way, but it comes... [changing his voice, imagining a dialogue] "do you know cheese? ok, we don't know... – so, you never eaten cheese", something like that. I didn't say "do you eat cheese?" like… but if you ask "do you know cheese? – I don't know... – oh, you've never taken cheese? – No I've never taken cheese..." **so it's just a way people bring in the question**, but the questions normally advise to have all the questions coming.

NA-5: Is it part of the training? do you explain the enumerators how to deal with these difficult questions?

> MFM-5: Yeah, it's part of the training, we train people to prop. If you don't want... if your question is directly... you just ask and they respond then they say **how you can phrase it to have the answer from the respondent in a good way, that he understands that you did not just ask to scare them, or humiliate them or something.** So, we normally train enumerators on how to ask difficult questions in a way that they can understand and they can answer you. Yeah.♦

In question NA-1, I expect Marek to talk about the questions that were usually not understood by the respondents and that required a lot of explanations from the enumerators. But in his answer MFM-1, Marek focuses on questions that create an uncomfortable interaction between the enumerator and the respondent. He distinguishes between the cheese example, that is not specific to the Kianga project, and the question on life expectancy, that is specific to the Kianga project, reminding the fact that RCT questionnaires tend to feature standard modules, very common across the different experiments[112] as well as *ad hoc* modules, that are specifically fitted to the project. In this case, the cheese question belongs to the food consumption module, that is a very common way to proxy a household's living conditions. Food consumption is often used as one of the outcomes to assess the impact of a poverty-reduction intervention in RCT. The question on teenagers' perceived life expectation is on the contrary very specific to the Kianga project. This whole module is aimed at measuring the effect of women entrepreneurship on children's aspirations for the future. Marek does not develop this one example, but we are both very uncomfortable about it and during the interview there is some implicit between us: we agree that the question is shocking: Marek does not try to defend or save it in any way, except by using awkward euphemisms like "a bit… not used to".

More interesting is the case of cheese, because Marek introduces a nuance that seems to matter to him, and that does not come from the phrasing of the questionnaire. Marek distinguishes between the respondents who know what cheese is but who have not eaten cheese in the period preceding the interviews, and respondents who do not know what cheese is at all. He first insists on the fact that the question must be asked, no matter what: "if the question is 'did you eat cheese', we just say 'did you eat cheese'". The situation that he describes as the worst possible case is to face a respondent that does not even know what cheese is at all, probably because it reveals both a situation of not only food poverty but also remoteness, and ignorance. That is

[112] Marek explains, during the same interview: "the projects have different names, but the questions in the questionnaire, most of the questions… there are some questions that are just similar to other questionnaires be it agriculture or Kianga, because we all ask about health, about food, huh… [the villagers] just get it: ok these people will ask me about food, about expenditures, about purchases in the household… So, for any project that goes in the village, they have an idea of what's coming regardless of what specifically the project is about."

why Marek advises to ask the question in two steps, first gently asking if the person knows cheese, and then asking if she has consumed any in the period preceding the interview.

The interview may be very intense moments during which mutual misunderstandings and efforts to resolve them reveal the gap between the ideal respondents imagined by the questionnaires' authors and the actual respondents. They also reveal the gap between the enumerators and the villagers, despite the fact that they are fellow countrymen and women and speak the same language. Do the interviews have any transformative effects? The questionnaires are aimed at extracting information *from* the villagers, but they also bring information *to* them. For instance, when the enumerators ask to teenage respondents whether they agree or disagree with a certain number of statements about gender representations, they do not only extract data, they also bring statements to these teenagers (e.g. "It would be good to have a woman as the village leader" or "A woman should tolerate violence to keep her household together"). It is difficult to estimate the transformative power of the interview, but there are some clues here and there that suggest that the respondents start to do things slightly differently.

> NA1: Do you find it easy to survey rural areas?
>
> MFM1: Surveying in rural areas is not very hard compared to the city, here in town. […] In the villages, it's also easier because they have now got used to surveys: every research goes to the village, every research goes to the village... So, at least they… We do things that they normally know. We never asked 'how many times you have been surveyed', **but most of the surveys that EvaP has been doing, you can even find respondents knowing the answers to very many questions! So, in the villages they even started keeping records.**
>
> NA2: Really?!
>
> MFM2: Yeah, for the surveys. Like one of the researches we've been doing, in agriculture, all the questions… You find that there are some households in the villages, who have known even when EvaP would come back! [*Marek sounds impressed*] **So, they have the records: 'ok when we do any harvest'… they record somewhere because they want to… Because when the survey comes it's easier for them to answer, because: 'ok we cannot remember the two agriculture seasons that have passed'. Sometimes they keep records and, in the field, when you start surveying them: 'how many kilograms of this did you harvest in this season?', they just get a book and you find it recorded: 'ok, we have it recorded'.**
>
> NA3: Wow that's impressive!
>
> MFM3: So that's the good thing with the surveys in the villages. They now get used, they know what is happening, they know about research. […] Yeah, they [the

> respondents] tend to make it easier […] they know the hours we take [when we interview them], so to avoid all the questions that we ask, they keep that record. Its only that… ok we also see the records but also depending on the questionnaire there's some questions that they may not have written on their document, not everything so they just use the documents as a reminder… but it works.

Marek recounts how some villagers have become experts in answering questionnaires, and how they have started to record information by taking notes, especially for the purpose of facilitating the structured interviews with EvaP.

This section aimed at rendering the thickness and complexity of the face-to-face interview situation, that is extremely demanding both for the enumerators and for the respondents. Their mutual efforts to keep the interaction going and bearable may affect the data produced over the course of the interviews: respondents lie to protect themselves; enumerators circumvent questions to spare the respondents' patience and sensitivity. For many questions, the enumerators do not simply read a question and collect an answer from the respondents; they answer together with the respondents. They help the respondent to produce an answer that makes sense and fits in the rigid framework of the questionnaire. I call these data anchored fictions: they may be invented and guessed rather than collected, but they are as solidly anchored in the material reality of the village as possible. The enumerators' inventions and guesses are educated and based on many material clues. In my opinion, anchored fictions are the best possible type of data given the nature of the questionnaire. Moreover, the intensity of the interview situation can also be analyzed in terms of its potential effects on the respondents. Throughout the experiment, the villagers are exposed to particular ways of categorizing, defining and calculating things that come from the Research Team 5 economists. How do the questions they are asked resonate to them? The question shall remain unanswered but open. If anything, we can conclude that the survey has an autotelic efficacy: it has, at least, the effect of transforming villagers into respondents better able to answer a survey.

Conclusion: fieldwork as an invitation to development?

This chapter discusses three aspects of the fieldworkers' activity. First, they act as scouts and pathfinders, so as to find villages that can be aggregated to the experimental sample. Second, they engage with the villagers and find various ways of interesting them into the experiment. Third, they interview the villagers who have volunteered to be part of a Kianga micro-

enterprise. The description of all the interactions taking place during fieldwork first aimed at bringing attention to its thickness and complexity. Fieldwork is analyzed not only as an instrument of knowledge-production, but also as a sustained encounter that is worth studying in and of itself. The micropolitics of RCT happens over the course of these mundane operations. I ask whether the experiment machinery itself, rather than the solar lights or the micro-enterprises, is a leaven of transformation. The experiment and the effervescence resulting from it work as a vast preparation operation. I would like to suggest that the survey infrastructure works as an invitation to something larger than just taking part in the Kianga Energy Research Project. An invitation to what? To development, to a more modern and comfortable way of life, to take part in a more formal economy? What if the efficacy of the whole project lay in the experimental machinery rather than in the micro-enterprises? Does the arrival of the smart looking, English speaking fieldworkers in the villages modify something in the villagers' worldview and aspirations, in their idea of the good life? What if the villagers were receiving a tiny commercial sample of a more comfortable life, towards which they are beckoned, without receiving more to be helped in their quest than a micro-enterprise selling tiny lights made in China?

Seen from the villages, the Kianga Energy Research Project sometimes seems absurd, and the survey questionnaire written by the economists may seems out-of-place. The next chapter attempts at offering an account of the experiment that inquires into what the economists are trying to accomplish with the Kianga Energy Research Project.

> If translated into English, most of the ways economists talk among themselves would sound plausible enough to poets, journalists businesspeople, and other thoughtful though noneconomical folk. Like serious talk anywhere – among clothing designers and baseball fans, say – the talk is hard to follow when you have not made a habit of listening to it for a while. The culture of the conversation makes the words arcane. But the people in the unfamiliar conversation are not from another universe. Underneath it all (the economist's favorite phrase) conversational habits are similar. Economics uses mathematical models and statistical tests and market arguments, which look alien to the literary eye. But looked at closely they are not so alien. They may be seen as figures of speech – metaphors, analogies, and appeals to authority. Figures of speech are not mere frills. They think for us. Says Heidegger, "Die Spracht spricht, nicht der Mensch": The language speaks, not the human speaker. Someone who thinks of a market as an "invisible hand" and the organization of work as a "production function" and her coefficients as being "significant," as an economist does, is giving the language a lot of responsibility. It seems a good idea to look hard at the language. (McCloskey, 1998, p. xix)

Chapter 3: The double challenge of RCTs: producing knowledge while carrying out a social intervention in the villages

Introduction

The economists are almost completely absent from the previous chapter. It is not only the artificial result of my focusing on the activities of the fieldworkers: it also reflects the fact that the economists only rarely (if at all) visit the field. This elusiveness is not specific to the Research Group 5: the division of labor between the researchers designing the experiment, and the fieldworkers collecting the data is very common in RCTs (Jatteau, 2013). Not only are the economists physically absent from the field, but they are also absent in the sense that many problems (practical issues, ethical dilemmas, data collection glitches) are solved without them – sometimes in a way they would probably disapprove, in the heat of the moment. They miss

many things that happen in the villages. Once the ball is rolling, their connection to the field mostly consists in a weekly phone call with the field managers. This absence calls two comments. First, as shown in the previous chapter, even removed from the field, the economists exert a transformative action on the field site – this chapter will provide some further illustration of this action at a distance. Second, the economists' attention is turned towards the outside of the experimental site: the results obtained in the villages are valuable to the extent that they can be used to address actors standing very far from the villages (peers, donors, policy-makers, "stakeholders[113]", etc.).

The chapter describes how the economists of the Research Group 5 construct their objects of knowledge, on the one hand, and their objects of intervention, on the other hand: the two do not necessarily overlap. Inquiring into the work of the Research Group 5, I attempt at responding to the invitation formulated by political theorist Timothy Mitchell's in the conclusion of an article discussing the effects of economics on the economy:

> "The question of what economics does, however, can only be addressed by following it at work. Taking a particular experiment and tracing the narrow but well signposted paths that connect it to other projects offers the way to a more expansive understanding of the work of economics" (Mitchell, 2005, p. 318).

How do the economists turn social concerns into research questions that are in turn transformed into experimental objects? Which data is collected and how is it analyzed? How are the results interpreted and used to support policy recommendations? How does the experiment problematize poverty? The Kianga Energy research project being very complex and addressing several issues through multiple, intertwined experiments, this chapter mostly narrows the inquiry down to the perimeter of one constellation of problems related to female micro-entrepreneurship. By tracing the epistemic and political work accomplished by the Research Group 5 about the notion of female micro-entrepreneurship, I aim at understanding how poverty is problematized in the experiment: how various thematic issues are connected to poverty, and which interventions are proposed to remedy them.

The objective of this chapter is twofold. First, I wish to contribute to the small corpus of case studies describing RCTs (Bardet and Cussó, 2012 ; Bédécarrats et al., 2019 ; Kabeer, 2019 ; Quentin and Guérin, 2013). Indeed, the literature about RCTs often consists in general discussions of the methodology – which is, of course, extremely valuable and useful. However,

[113] Term used by the Research Group 5 to describe the organizations (NGOs, social businesses) involved in the distribution of solar lights or other "clean energy products".

describing and analyzing cases seems necessary to deal with the potential heterogeneity in the practice of RCTs. In the mediatic space, or when facing a scientific controversy (e.g., the 2014 "Worm War"[114]), the randomistas advance in tight formation and their communication is quite homogenous. Moreover, the largest organizations specialized in RCTs (the J-PAL, IPA and the World Bank's DIME) publish online resources and guidelines geared at researchers[115]; this material sets standards regarding the impact evaluation methodology. However, in the absence of an explicit theoretical framework, and given the exponential growth in the number of RCTs carried out these past fifteen years, there may be differences, not only due to the diversity of situations (e.g. different topics, different countries, different implementing partners) but also in the way the researchers build their research object and turn it into an experiment. Second, this chapter aims at eliciting the theory of change underpinning the Kianga Energy Research Project, and thus shedding light on the way poverty is problematized through the experiment. The labification of the field site is both epistemic and political, and this chapter is an opportunity to qualify the different ways in which the economists do politics.

In this chapter, I analyze the different epistemic and political operations accomplished by the Research Group 5 around the notion of female entrepreneurship. I try to pay attention to details, to the way the Research Group 5 frames and defines problems. In the very way various problems are turned into experimental objects, in the folds of the experiment, there are micropolitical gestures.

This chapter is mostly based on a corpus of documents written by the Research Group 5. It includes the various versions of the report they addressed to their main funder, Womenergy, various unpublished notes that I could consult, many short articles, a couple of working papers. Several of these documents are part of a collaboration dynamics between the Research Group 5 and Womenergy, a dynamic that I could only understand after I spent an intense week representing the Kianga Energy Research Project and the Research Groups 5 at a workshop convened by Womenergy in a South Asian city. All the research groups were required to

[114] The worm war was commented by several economists and social sciences scholars (Abdelghafour, 2017 ; Allen and Parker, 2016 ; Clemens and Sandefur, 2015 ; Humphreys, 2015).

[115] The J-PAL published both "public research resources" and internal resources that are accessible only by the researchers who are affiliated to the J-PAL. The publicly available resources start with an introduction to the RCT methodology and then provide step by step guidelines to set up an RCT. IPA requires its affiliates to comply with some research protocols and "maintains a suite of technical tools, trainings and support staff so that researchers can maintain compliance with these research protocols" (https://www.poverty-action.org/researchers/research-resources/research-protocols, last consulted 08/20/2020). The World Bank's DIME created a wiki dedicated to impact evaluation (https://dimewiki.worldbank.org/wiki/Main_Page, last consulted 08/20/2020). All three organizations offer trainings on a regular basis.

attend[116]. I do not directly analyze what happened during this week anywhere in this dissertation, but this last step of my fieldwork retrospectively shed much light on all the rest, and especially on my interactions and collaboration with the Research group 5. I learnt about the institutional environment of the project, about Womenergy and the expectations of its members. My interactions with the Research Group 5 (emails, phone meetings), with Womenergy and with the other research groups sketched a context that I would have otherwise largely missed. The Research Group 5 and Womenergy pursue different aspirations, sometimes conflicting, with the Kianga Energy Research Project. The friction between the two entities contribute to shape the experiment.

One methodological difficulty arose when writing this chapter: it seemed impossible to reconcile the deontological imperative to anonymize the project as well as possible, and the academic and anti-plagiarism exigences in terms of bibliographic references. In sections 2 and 3, I constantly refer to some of the documents written by the Research Group 5, but I cannot properly reference these documents without revealing the identity of the researchers. I reached the following compromise: I chose to resort to paraphrase instead of direct citation, except when the citation includes no more than a couple of words and cannot be traced back to the document online. I artificially restrict the number of documents I use as sources: when one element I comment upon can be found in several documents, I only indicate one of the sources, the most important one. It narrows down the number of documents to the three longest and more exhaustive pieces (even if I read and analyzed many more documents). I also occasionally introduced minor inaccuracies (e.g. in the number of villages in the sample, in the amounts of money) for anonymization purposes.

To clarify, I created a diagram with the most important documents (fig. 11 below) and their position in the Research Group 5 publication network – who authors which document? Two of the documents represented on the diagram are analyzed in chapter 4, and the three other documents are the ones I refer to in the present chapter.

[116] As explained in the introduction of this dissertation, a series of life accidents or familial obligations prevented all the members of the Research Group 5 to attend the workshop. They first tried to send their collaborators at Evidence against Poverty to attend in their place, and they finally asked me to go (at that time I was observing the day-to-day implementation of the project and data collection in the villages), and I ended up being, weirdly enough, the only person to represent the Research Group 5.

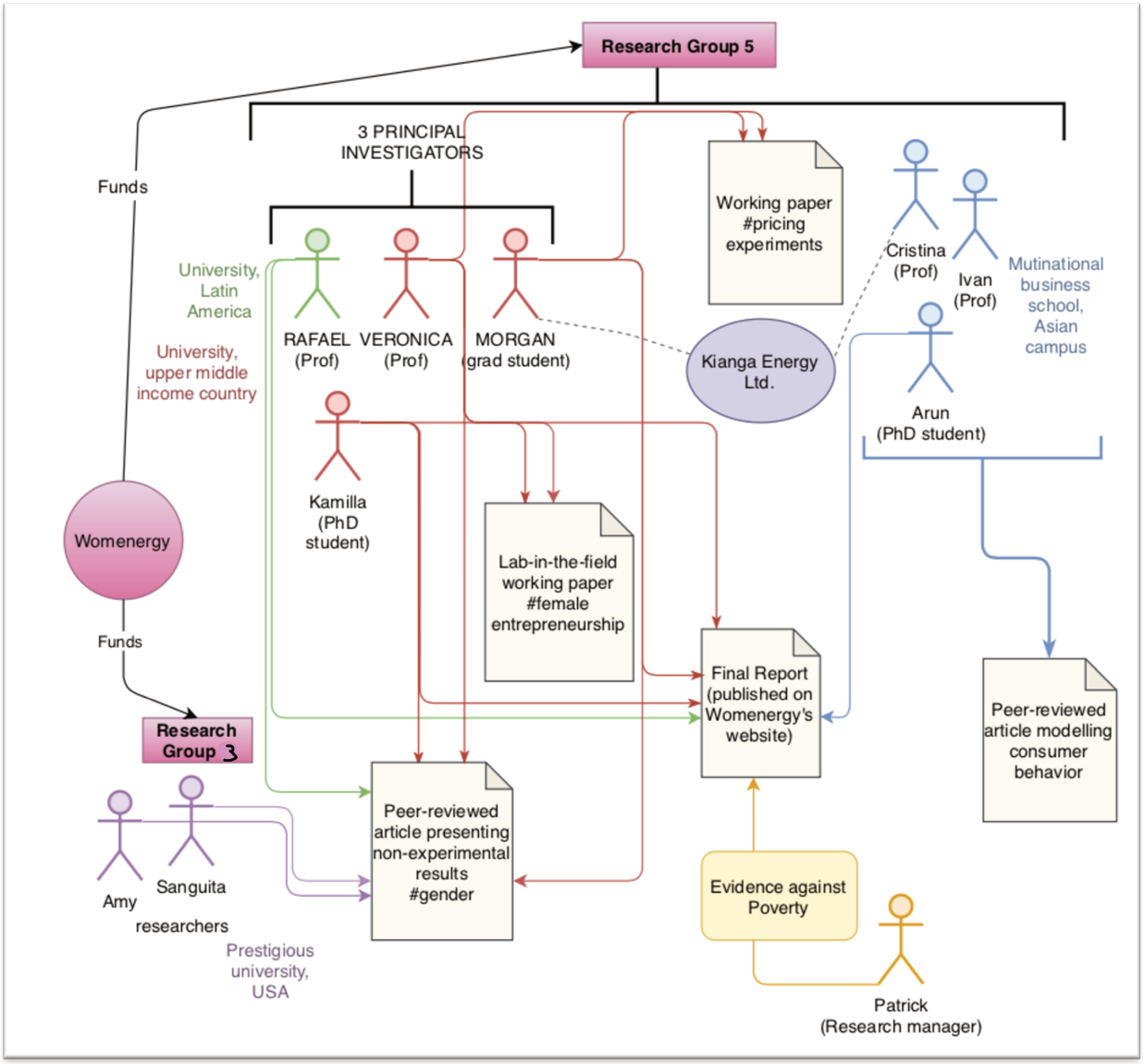

Figure 11: Some publications by the Research Group 5

Section 1 maps the Kianga Energy research project by tracing the network of the consortium including researchers from different institutions and various donors. It explains how the Research Group 5 formulated research questions, articulating social issues important to the donors with their own research interests. It also maps out the theory of change underpinning the experiment. **Section 2** traces the epistemic and political operations accomplished by the economists around the notion of micro-entrepreneurship: how micro-enterprises are expected to play a role in poverty-alleviation, and how micro-enterprises' success can be measured and explained. **Section 3** reflects on the Research Group 5 treatment of women's empowerment through access to micro-entrepreneurship. I show that the Research Group 5 subscribes to a very restricted vision of women's empowerment.

Section 1: Who are the experimenters?

This section provides elements on the Research Group 5, on its main funder, the European NGO Womenergy, and on the working relationship between these two entities. The first subsection offers a reflection on the economists who practice and promote RCTs as a gold standard methodology. What can be said about the "randomistas" as an epistemic and political collective? Do they differ from other development economists and how? This general reflection on the randomistas aims at putting into perspective the epistemic and political choices made by the economists of the Research Group 5. In the second subsection, I recount how I connected with the Research Group 5 and map the network of the entities with which the Research Group 5 collaborated in the context of the Kianga Energy Research Project . In the third subsection, I describe Womenergy, the project's main funder, and discusses its vision of evidence-based policy, diverging from the one underpinning RCTs. In the last subsection, I map out the different components of the Kianga Energy Research Project, and I elicit the theory of change underpinning the experiment.

1.1. The randomistas as political actors

This first subsection presents the RCT-proponents through Th a specific angle: the political work they accomplish through their evidence-based movement and experimental approach to poverty. There has been much academic work about the political work accomplished by economists, starting with Max Weber's canonical pieces (Weber, 2001 [1919]). The following discussion is not, in any way, aimed at providing an exhaustive state of the art on the question. It focuses narrowly on three aspects of the work of the randomistas: their closeness with power, the normative dimension of their work, and the transformative action of their experiments.

1.1.1. The randomistas: apolitical policy-makers?

The randomistas have always asserted the policy-making and policy-influencing dimensions of their scientific activity[117]. Rather than external evaluators, they have soon become co-experimenters, collaborating closely with the implementing partners and taking part in the design of the interventions (Banerjee and Duflo, 2009, p. 155). They insist that economists can be better policy-designers than bureaucrats and elected officials, thanks to their attention to the details of policy implementation (Duflo, 2017). They have successfully created long-term partnerships with NGOs[118] and local governments, especially in India and Kenya, where the J-PAL is well-established. While they vigorously deny any particular political or ideological inclination, they gladly emphasize their role as decision-makers' advisors and partners. Their purportedly objective, non-partisan approach – challenged by commentators[119] – guaranteeing an impartial, scientific expertise at the service of governments. This commitment to axiological neutrality is strikingly expressed in this (much cited) quote taken from a long and flattering profile of Esther Duflo[120], published in the New Yorker magazine shortly after she was awarded the John-Bates-Clark medal[121]:

> "One of my great assets of being in this business, or maybe I've developed it over time, is I don't have many opinions to start with. […] I have one opinion — one should evaluate things — which is strongly held. I'm never unhappy with the results. I haven't yet seen a result I didn't like." (Parker, 2010)

[117] This is also true of economists in general, who have gradually replaced other experts (e.g. lawyers) as policy-makers' advisors. Sociologist Marion Fourcade summarizes different ways of explaining the political influence of the economists (Fourcade, 2018). Economics being often regarded as the science of efficient individual and social decision-making, economists have been able to enter perilous political and moral debates with seemingly objective, axiologically neutral and rigorous epistemic instruments (e.g. cost-benefit analyses, supply and demand models, market equilibrium theories). Markets and price mechanisms being established as Foucauldian "truth-telling" instances, the economists are well positioned to assess policies in the light of how markets react to them. Finally, economics being defined as the science of allocating scarce resources, they are ideal partners for governments that are most often seeking to save money.

[118] See for instance a short paper written by the current and former heads of the Indian NGO Pratham and entitled "A twenty-year partnership of practice and research" (Banerji and Chavan, 2020)

[119] See for instance the review of Duflo and Banerjee's *Poor Economics* by Cédric Durand and Charlotte Nordmann (2011).

[120] In this chapter, I often refer to Esther Duflo's work and mediatic appearances. As Agnès Labrousse does in an article comparing Esther Duflo's and Elinor Ostrom's approaches, I do not take Esther Duflo as "an isolated individuality" but as a "leading figure of an epistemic community with strong intellectual and personal ties" (Labrousse, 2016).

[121] Prestigious distinction awarded yearly by the American Economic Association to a US citizen under 40. This prize is considered as the "antechamber of the Nobel" for economists, which, in Duflo's case, was proved true.

This absence of "opinion" about the results is related to the randomistas' claim to theoretical agnosticism, and to their radical commitment to empirical findings. In the same piece, Duflo adds:

> "It can't only be the data. […] Even to understand what data means, and what data I need, I need to form an intuition about things. And that process is as ad hoc and impressionistic as anybody's." (Parker, 2010)

To make sense of the data, Duflo explains that she does not resort to theory, but to intuitive insights. This position has inspired two types of comments to scholars. First, economists argue that without a theory, or at least, a clear causal mechanism underpinning the experiments, RCTs can produce only very little valuable, generalizable, knowledge (Deaton, 2009 ; Labrousse, 2010 ; Rodrik, 2008). The second point is formulated by heterodox economist Agnès Labrousse:

> "By contrast [*with Nobel-awarded economist Elinor Ostrom's approach*], the overall approach by Duflo and the J-PAL is less developed: while the statistical technique is well documented, her fieldwork experience, her relationship to theory and her social philosophy are often implicit, constraining to draw on hints and practices transpiring from publications and interviews to delineate her epistemology, at the risk of misinterpretations." (Labrousse, 2016, precision between brackets is mine)

Despite the important effort of communication and advocacy accomplished by the randomistas to publicize their work and mainstream their methodology, many blur areas remain indeed: where do the economists insights come from? How do they choose the interventions that they test? What is their relationship to economic theories? Agnès Labrousse, who analyzed Duflo's epistemological work, found that she mostly cites recent work and that

> "[T]hese references are mostly recent and oscillate between the two polar extremes represented by Jeffrey Sachs' centralized constructivism and William Easterly's decentralized Hayekism" (Labrousse, 2016, p. 280).

These two economists, Sachs and Easterly, have opposed one another in a ferocious debate dubbed "the aid war" by the commentators. Sachs insists that official development aid volumes ought to increase considerably to help poor countries out of the "poverty trap" (i.e., a vicious circle of under-investment) by massively stimulating public investment (Sachs, 2006). On the contrary, Easterly claims that aid money is inefficient, especially in the absence of good governance in the recipient countries, and champions a piecemeal, market-based development (Easterly, 2007).

Some authors underline the randomistas' implicit affinity with neoliberal tenets. RCTs aim at bringing the behavior of the poor closer to the figure of the maximizing homo œconomicus (Bardet and Cussó, 2012). RCTs are also aimed at activating individuals, at equipping them so that they can bootstrap themselves and their family out of poverty (Akbulut, Adaman and Madra, 2015). Other authors nuance the claim that RCTs pertain to a neoliberal worldview: RCTs have mostly challenged the efficiency of microcredit, and Duflo insists that micro-entrepreneurship is not as desirable as wage work (Durand and Nordmann, 2011 ; Labrousse, 2010). More generally, the randomistas do not disregard the importance of social safety nets, and focus on questions such as health and hygiene, which brings them closer to non-neoliberal governmentality projects, such as German cameralism[122] (Labrousse, 2010). Economic geographer Christian Berndt argues that the randomistas have "found a third way", through "the formulation of libertarian paternalism as a policy script that is capable of overcoming both the perceived shortcomings of the interventionist state and the self-regulated market" (Berndt, 2015, p. 569)[123]. Another prism through which the social philosophy of the randomistas can be grasped is the prism of cost: anti-poverty intervention must not only be efficient, but also, as much as possible, inexpensive. Even when partnering with the state or with a public entity, the randomistas stress the idea that cost-effective policies should be favored, meaning that public spending ought to remain low (Bardet and Cussó, 2012). Local responsibility is emphasized, meaning that poverty is to be solved through local transformations, rather than redistribution of wealth and resources across localities or subgroups of the population. This has the effect of "naturaliz[ing] macrosystemic causes of uneven development" (Webber and Prouse, 2018).

1.1.2. Are the randomistas different from mainstream economists?

Esther Duflo and Abhijit Banerjee have entitled a book intended for a general audience (that later became a best-seller) *A radical rethinking of poverty* (Banerjee and Duflo, 2011). Some commentators have reused the term "radical" when describing the randomistas' work, making it seem like there is an epistemic gap between their work and the mainstream economists' work. The randomistas do share a number of distinctive traits, starting with a commitment to evaluation through the experimental method, which in turn delimits the objects they can study

[122] German cameralism is described in Michel Foucault's work. The cameralist tradition tries to implement a rationalist administration of the population, insisting on sound public finances, public order, and population welfare (Lascoumes, 2004).

[123] In another publication, Berndt describes this third way in terms of "soft paternalism" (Berndt and Boeckler, 2017)

– micro-social devices. But their methodological individualism and their reliance on microeconomic theory holds them very close to mainstream economists, according to heterodox economist Ingrid Kvangraven[124]:

> "However, all approaches in the social sciences are rooted in particular theoretical frameworks and worldviews, and the laureates' work is firmly grounded in neoclassical microeconomic theory. This has implications for how experiments are designed and the underlying assumptions about individual and collective behavior. […] The 2019 Prize is, therefore, in many ways, merely a symptom of the theoretical and methodological shift that has taken place in the mainstream of development economics since the 1970s" (Kvangraven, 2020, p. 2)

Christian Berndt sees the randomistas as inheriting from a synthesis between early experimental economics (behavioral economics, game theory) and mainstream microeconomics. Experimental economics challenged the figure of the homo œconomicus and the assumption that economic agents are perfectly rational. The randomistas acknowledge that people do not act as rational agents, and strongly resort to behavioral economics that allows for more complex decision-making patterns models. However, the model of the perfectly rational agent is not discarded: it is kept as an ideal towards which people need to progress. The normative efficacy of standard microeconomics holds strong among RCT-proponents. To bring the poor closer to the model of the rational agents, the randomistas heavily resort to nudging (Berndt, 2015). This strong normative dimension is not specific to the randomistas though: economics, in general, is a normative science (Fourcade, 2018).

1.1.3. What makes the transformative power of RCTs?

One of the questions that motivate this chapter is to qualify the different manners in which the economists, and particularly the economists doing RCTs, do politics while carrying out their scientific activity. So far, I focused on the normative dimension of RCTs, on which the social engineering efforts of the randomistas are based, and on the closeness with political power that they have been able to establish in several countries. The randomistas' efforts to collaborate with governments sometimes fail though. Duflo recounts, not without irony and derogatory comments, a disappointing meeting with important officials in Kerala, the most developed of the Indian states. Duflo describes apathetic and unresponsive bureaucrats, leaving the meeting early (Duflo, 2017). The bureaucrats in question offer a different view of the encounter in an

[124] Ingrid Kvangraven runs an influential blog, *Developing Economics*, where heterodox economists write about development. Several posts criticizing RCTs can be found on this blog. https://developingeconomics.org/

Indian Newspaper: they claim they perfectly understood Duflo's proposition, but remained unconvinced. The Keralan government was redesigning a health program, and planned to turn primary health centers into family health centers. They consulted the J-PAL economist to fine-tune the policy design.

> "On their part, the Kerala team was not particularly enthused by Banerjee's and Duflo's randomized trial method. They felt it was a bit too rigid, and removed from reality. "The question was: is it possible to break health into discrete activities whose effects can be segregated from related factors and studied separately", Rajeev [the "top bureaucrat" described by Duflo] said" (R., 2019, precision between brackets is mine).

However, Duflo insists on the importance of the collaboration with policy-makers when it does take place, especially on a large scale. In such cases, the importance of producing generalizable evidence, which is core to the RCT-movement, is lessened:

> "When economists work on understanding how to design a policy that is going to affect millions of people and cost millions of dollars, the stakes are high enough that it is perhaps less important to know whether the findings will generalize beyond the particular work. Working with governments to evaluate versions of these programs as they are being deployed represents a tremendous opportunity to generate evidence and improve the effectiveness of money that is already being spent. Moreover, as we have seen, the lessons that are generated from these partnerships are often actually acted upon, which means that gains from evaluation are not just potential, they are actual." (Duflo, 2017, p. 30)

Duflo's above quoted article was actually first written as a speech pronounced at a meeting of the American Economic Association. It represents a recent shift in the type of evidence-based policy championed by the randomistas. From identifying interventions "that work" and scaling them up afterwards on the basis of the evidence produced on a smaller scale, the sequence has been merged into one large sandbox, in which the economists, with the trust of officials, directly experiment on a large population[125].

When RCTs unroll on a smaller scale – which is still the majority of cases – the transformative power of experiments can also arise from their performative nature. The performativity of economics is analyzed in an abundant literature, and summarized by STS scholar Fabian Muniesa as "the idea according to which economics does contribute in a performative manner

[125] This blurring of the line between organizing an experiment and carrying out a policy supports the claim that RCTs contribute the advent of experimentality.

to the construction, enactment, initiation, transformation or maintenance of economic things[126]" (Muniesa, 2016, p. 201). Fabian Muniesa, writing about "modern" economists in general, imagines that economists may be conscious of the provoked nature of the phenomena they study, "claiming naturalism while blatantly performing", and performing to bring the world closer to their normative ideal. Economist Dorothea Kübler uses a theatrical metaphor to explain her claim that RCTs are performative. Experiments artificially produce reference situations that get attention and the reality of which is enhanced as a result of the experiment setting:

> "There can be theatrical moments in experiments, especially when people interact in unexpected ways and thereby offer insights into human nature. […] This theatrical situation is described to the reader of an experimental paper or the audience of a talk. The experimental setup thereby becomes vivid enough for the listener to put himself in the shoes of and empathize with the participant in the experiment. It is this performativity of experiments that has contributed to the success of experimental economics in convincing neoclassical economists and a general audience of the reality of certain behaviors that were previously regarded as unimportant, non-existent or simply too rare."(Kübler, 2010, p. 5)

RCT is thus an eminently political practice, to the extent that it does not only serve to evaluate policies, but also to set the agenda, by contributing to the emergence of particular issues.

Finally, RCT is a political device because of the unique relationship it establishes between the researchers and the people caught in the experiment. The researchers are invested with the demiurgic (or simply, political) power of intervening in the social life in ways that benefit some people and disadvantage others. Beyond the most obvious point (people assigned to the treatment group, contrary to those assigned to the control group, stand to get some resources from the experiment), emergent effects might appear. Sociologist of science Langdon Winner argues that technical artefacts and material infrastructures, just like public policies, may benefit some people at the expense of others (Winner, 1980). I would argue that RCTs stand somewhere between sociotechnical artefacts and policies, and that they may indeed create winners and losers. For instance, the J-PAL organized an experiment aimed at fighting primary school teachers' absenteeism in India. In the treatment group, the teachers were equipped with a digital camera and required to take a time-stamped selfie of themselves with their pupils, in the

[126] Case studies demonstrate the importance of performative mechanisms in the emergence of macroeconomic objects such as the national economy (Appel, 2017) and the energy crisis (Mitchell, 2010). More generally, Mitchell explains that experiments are to be understood as a system: the result of one economic experiment (in his example, run by the Chicago boys in Peru) are then "available to be folded back into further projects and experiments of neoliberalism, helping to secure the facts of economics" (Mitchell, 2005).

beginning and in end of every school day. Their wage was adjusted according to their attendance[127]. Esther Duflo was asked about the shocking character of the constraint imposed on the teachers:

> "Compared with a control group of the same size, the photographed teachers were half as likely to be absent. They did not resent the cameras, but it wouldn't have troubled Duflo if they had: 'Who do you care about? Lazy teachers who show up sixty per cent of the time, or the kids? O.K., I care about the kids.'" (Parker, 2010)

The experiment clearly produced losers, the teachers whose working conditions degraded, setting a potential precedent for substandard working contracts. There is no investigation to find out why teachers are absent 40% of the time, this social puzzle is promptly solved by a moral judgment on the teachers' behavior, and a very direct application of the principal-agent theory[128].

The other type of relationship between the researchers and the people they experiment on is a representation relationship. The economists act as spokespeople, in the sense of Latour – a robust chain of reference[129] links them back to the experiment participants, enabling them to translate and aggregate their answers into figures, facts and statements. But they also often behave as spokespeople in a more political sense – in the sense they use the experiments to make claims on behalf of others, to call out leaders and policy-makers and to tell them what to do to better help the poor. One might want to interrupt and say: but don't other social sciences do the same? Don't sociologists write about the groups who stand low in the social hierarchies? Aren't anthropologists supposed to give a voice to the voiceless? Well, one important difference is that RCTs are not geared at giving a voice to the people who are experimented upon. In fact, it is the very opposite: the more candidly people act, the more likely the experiment is to succeed. The participants in an experiment are not observed or asked what they think. The extent to which the participants can express themselves is strictly restricted to reacting to whatever intervention and experimental setting the economists designed – the political relevance of such framing is debatable.

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[127] https://www.povertyactionlab.org/evaluation/encouraging-teacher-attendance-through-monitoring-cameras-rural-udaipur-india

[128] This economic theory warns against the potential moral hazard when a "principal" mandates an "agent" to accomplish a task. Without monitoring and control, the agent may take the money and fail to achieve the mission.

[129] The previous chapter, through a detailed description of the data collection process, reinterprets the "robustness" of the reference chain with the notion of anchored fictions.

1.1.4. Esther Duflo on women's empowerment

Finally, let us take a closer look at the thematic issue of this chapter: women's empowerment. Esther Duflo wrote a state of the art reviewing economics papers dealing with the reciprocal causal relationship between economic development and women empowerment (Duflo, 2012). This article stands among Duflo's most cited pieces, with 1744 citations according to google scholar[130]. Yet, it has never appeared in the Research Group 5's references thus far, maybe reflecting the fact that nobody in the Research Group 5 has researched the literature about gender. Esther Duflo defines empowerment as "improving the ability of women to access the constituents of development – in particular health, education, earning opportunities, rights and political participation". In the end of this article, she explains that redress interventions, meaning interventions that correct inequalities between women and men (typically, gender quotas), are desirable in and of themselves, because women deserve equality; however, says Duflo, they are not "unambiguously justified". "Such policy action would be unambiguously justified if empowerment of women also stimulates further development, starting a virtuous cycle" (Duflo, 2012). She makes the same argument, in simpler words, to the New Yorker's journalist:

> "One might approve of the findings from the point of view of redress, but redress doesn't register as an economic gain. The quota system did not lead to over-all economic efficiencies. And, as Duflo put it, if a policy doesn't "make the pie bigger, you cannot say unambiguously it is a *good* policy." (Parker, 2010, original emphasis)

If policies aimed at redressing inequalities (e.g. between genders) create market distortions, or entail costs that are not compensated by gains, or fail to prove economically efficient, they are, according to Duflo, more difficult to defend from an economist's point of view[131]. It sheds yet another light on what Duflo might mean when she says she doesn't have opinions: the market remains a major truth-telling device in her worldview, and the prism of economic efficiency predominates. This reveals a particularly technocratic vision of policy-making.

When it comes to women's empowerment more specifically, Duflo's approach is deemed limited by heterodox economists, because it is based on too simplistic a theory of human action that fails to deal with collective dynamics.

[130] Last consulted on April, 27th 2020.

[131] Contrary to other social sciences, economics comes with a promise, the promise of making, saving, or better allocating money (Fourcade, 2018).

> "Because of this, Duflo fails to understand a series of other important factors related to women's empowerment, such as the role of sustained struggle by women's organizations for rights" (Kvangraven, 2020).

Feminist scholar Naila Kabeer, who has recently started to write about RCTs and women's empowerment, is also severe with Duflo's approach to women's empowerment:

> "What troubles me about the paper is what comes in between: an understanding of human behavior which is uncritically informed by neo-classical microeconomic theory, and the very "thin" evidence base she offers in support of her arguments. As feminist economists have long argued the standard assumptions of microeconomic theory tend to absolve its adherents of the need to know much about the social contexts of the behavior they study […] Since all behavior can be explained as manifestations of individual maximizing behavior, alternative explanations can be dispensed with. This probably explains the thinness of her evidence base and the fact that her citations are largely restricted to the work of other mainstream economists who share her theory of human behavior. The work of feminist economists is given short shrift, despite the article's publication in the Journal of Economic Literature."[132]

The criticisms addressed to this paper are quite representative of the commonly stated pitfalls of RCTs: the lack of interdisciplinarity, the lack of thematic expertise – on the pretext that micro-economic theory can grasp any human behavior, and the lack of interest for each particular context.

1.2. The Research Group 5, a team in need of collaborators

In late 2015, I contacted EvaP's director in an East African country. I explained that I had done a research internship with EvaP a few years before, and that I was interested in following the implementation of an RCT. After asking for my references and my CV, the director put me in touch with Veronica, one of the principal investigators of one of the six RCTs ongoing in the country. Veronica seemed to be happy to have a new person on board: she had been looking for a masters' student or for an intern to volunteer on the project. I later understood that Womenergy, the project's funding organization, asked the Research Group 5 to recruit a gender expert, and demanded more qualitative work. Veronica hoped that I would contribute to the project by doing the qualitative work demanded by Womenergy. This is at the root of an ambiguity I remained unable to lift: the principal investigators of the Research Group 5 acted as if I had been an intern recruited to assist the team with "qualitative work". They kept thinking

[132] http://feministeconomicsposts.iaffe.org/2013/12/19/esther-duflo-on-womens-empowerment-and-economic-development-a-must-read-for-feminist-economists/

that I was working, along with them, on the same objects. I could never convince them that RCTs were my object of research.

Veronica first tried to have me do a literature review on gender and energy problems, which I refused to do. Later, I accepted to take part in a campaign of telephone interviews with several organizations involved in selling clean energy products in developing countries. This exercise was imposed on the Research Group 5 by Womenergy. The Research Group 5 had submitted a first report corresponding to the "scoping" phase of their project. Womenergy's reviewers worried that the research design was too dependent on Kianga Energy Ltd.'s[133] business model and not relevant for the sector of clean energy at large. Womenergy provided Veronica with a list of contacts and advised the Research Group 5 to conduct interviews. I helped with that task, together with a student in economics who was interning with EvaP and a research assistant hired by EvaP[134]. We wrote a questionnaire together. I participated in some interviews, but the bulk of my contribution consisted in writing a short synthesis that the Research Group 5 reproduced in the second version of their "scoping report". Veronica also wanted me to "facilitate qualitative focus groups" with female villagers during my field trip. This was also largely aimed at satisfying Womenergy's demand for a stronger gender component in the project. Morgan, the other principal investigator, vetoed the idea. He said that he had had problem with a female student who visited villages of the field site during the pilot phase[135]. A young white female going around and talking to people might be too disruptive and introduce a bias in the experiment, Morgan thought. Finally, Veronica and Morgan found a compromise: I could accompany the field teams to the villages, and I was to provide qualitative insights on the gendered aspects of research.

The extent of my collaboration with the Research Group 5 was always related to their relations with Womenergy: they tried to use my help to answer the donor's requirements. I benefited from a situation where the Research Group 5 was struggling to meet the requirements of Womenergy, especially in terms of using mixed methods. I never met any of the Research Group 5's members in person, neither did I interview any of them. When I wrote an email to ask if I could interview them, Veronica answered: "this is a great idea and one our funder would

[133] As a reminder: Kianga Energy Ltd. partners with the Research Group 5 on the project. Their business model is indeed very specific – it is further described later in the dissertation.

[134] I do not mention her in my account of the Kianga Energy Research Project because she left the project to continue her studies quickly after I started my fieldwork.

[135] Morgan conducted a pilot experiment with Kianga Energy Ltd. in a dozen of villages before the start of the Kianga Energy Research Project.

like very much! especially if you approach it from an angle of what it means to do gendered research". She misunderstood that I was offering to interview the members of the Research Group 5 for communication purposes, to showcase short interviews on the funder's website. I sent another mail to clarify my intentions: I explained that I was actually hoping to interview them for my doctoral research. Nobody answered and I did not insist. However, I gathered enough information by other channels (phone meetings, emails, internal notes, publications and internet search) to be able to map out the Research Group 5.

The Research Group 5 is made of two teams. Four of its members belong to the same international research network, which focuses on environmental economics in the context of developing countries. Three of them, one professor (Veronica) and her two graduate students (Morgan, an ambitious masters' student, and Kamilla, PhD candidate), belong to the same university, located in an upper middle-income country. The fourth one (Rafael) teaches in a university, on a different continent (Latin America). He earned a PhD from one of the most prestigious US universities, and has worked in different countries. Veronica holds a PhD from an important Scandinavian university. The four of them specialize in microeconomics, development economics, environmental economics and behavioral economics. None of them has expertise about gender – which caused recurrent frictions with Womenergy. Veronica, Morgan and Rafael are the principal investigators of the project. Veronica was more specifically handling the relations with Womenergy, and Morgan had a stronger connection with Kianga Energy Ltd. Kamilla, the PhD candidate, was in charge of the lab-in-the-field experiment (described later in the present chapter). Morgan is both the most junior and the most central member of the team. He is the connection with Kianga Energy Ltd., and with the other team of researchers. The three other researchers, two professors (Cristina and Ivan) and their PhD student (Arun) belong to the Asian branch of a multinational business school with campuses in Europe, America and Asia. They self-describe as "decision scientists"; they do microeconomics applied to business problems. Their participation in the project is much more circumscribed. They wrote a theoretical paper modelling the consumption behavior (analyzed in chapter 4). Only Arun, the PhD student, co-authored the final report sent to Womenergy[136]. Below, I include a diagram, to synthetize the above information into a single visual (fig. 12).

[136] The Research Group 5 sent two reports to Womenergy: a "scoping" report after one year, and a final report in the end of the project.

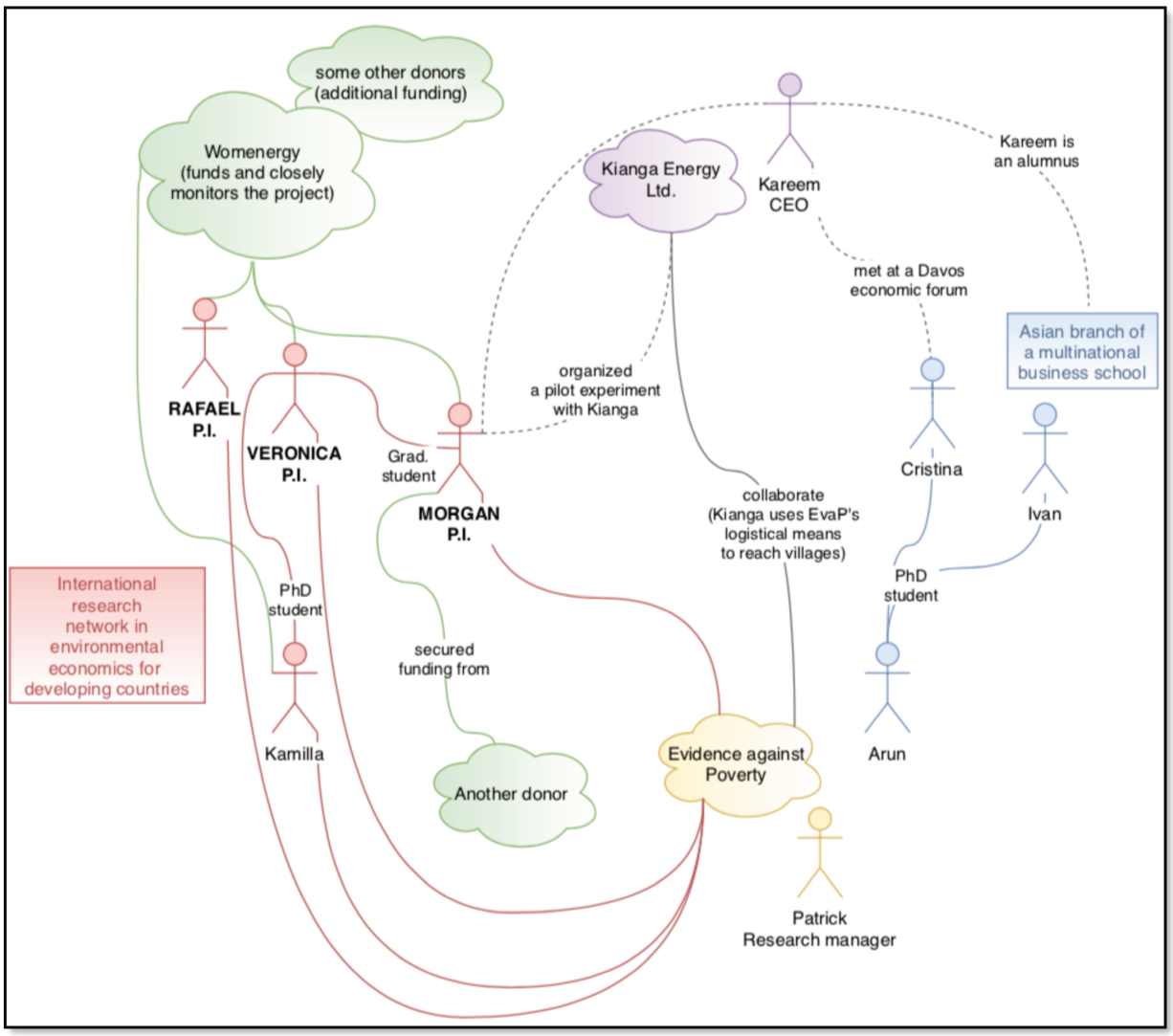

Figure 12: The Research Group 5's network

1.3. Womenergy, a demanding donor organization

Womenergy provided most of the funds in the Kianga Energy Research Project budget. However, it is not, properly speaking, a donor organization. This international network has worked on gender and energy issues since the second half of the 1990s. It gathers researchers from all over the world and has made connections worldwide with NGOs and social businesses specializing in selling energy in developing countries. Womenergy is not only a research organization, but also an advocacy and policy-influencing organization. Members of Womenergy actively lobby governmental organizations around the world and international

instances to "mainstream" gender[137]. The network has a presence in several high-profile international instances: one of its members, for instance, sits on the technical advisory group of one of the sustainable development goals (SDGs). Womenergy is also part of the UN-launched Sustainable Energy for all international initiative.

During five years, Womenergy managed a large budget granted by the public aid agency of a rich country, to coordinate an ambitious research project on gender and energy. They issued a call for proposals, and five consortia (among which the Research Group 5) won. The five research projects were closely monitored by Womenergy, and not only with regards to whether the Research Groups meet the requirements and produce the deliverables. Womenergy discussed the contents of research. All the research consortia were required to attend annual workshops, during which each group presented their work to the others, brainstormed and tried to create collaborations across research projects. I participated in one of these workshops, as the sole representative of the Research Group 5. This was unexpected: clearly, I was not a member of the Research Group 5. But a couple of weeks before workshop, Veronica, the principal investigator, realized that nobody in the Research Group 5 would agree to go – everyone was having serious health issues or family emergencies. Veronica first tried to send a research manager at EvaP, anonymized below as Maxim. Maxim worked in the same EvaP's country office that was managing the Kianga Energy Research Project, but he did not work on the Kianga Energy Research Project at all; he was in charge of different projects. Veronica received the following answer from her interlocutor at Womenergy (emphasis in bold characters is mine):

> "We are glad that [Maxim] will represent the [Research Group 5] team management. However, we understand that [Maxim's] role is that of project management, without past or future role in content of the research, and therefore it is unclear how **the objectives of the [workshop] to boost the gender sensitive fieldwork through exchange of experiences, and the objective to embed the policy influencing outputs in research and communication strategy** can be met with the suggested representation.
>
> Please could you inform us how you will pass on this 5-day program meeting from [Maxim] to the team members who are involved in the content of research and communication? **I suggest that at least one person who will either be involved in the writing process or the fieldwork itself will be present at this**

[137] Gender mainstreaming consists in ensuring that various programs and policies are geared at promoting gender-equality and include a gendered analysis of its impacts (Dauphin and Sénac-Slawinski, 2008).

> **meeting**, who would then support [Maxim] in the conveying and incorporation into the [Research Group 5] work."

This whole email (and the next) sounded rather stern and interpreted Veronica's difficulty to send her team to the workshop as one event in a series of mishaps and disappointments. The email's author clearly stated the goals and duration of the meeting, and specified which type of collaborator is expected to join. She reminded Veronica that the workshop was to be taken very seriously. The moment when Veronica received that email corresponded to the end of my field trip. I had just spent two months visiting in the villages of the experiment, embarked with EvaP's field teams. Veronica saw me as a suitable solution and I thought of the workshop as an opportunity to meet with Womenergy.

The workshop was intense, but also very pleasant. Thus far, the communication with Veronica and Morgan had not been fluid, but riddled with misunderstandings about the project and disagreements about what my role in it would be. I had received a lot of documentation but very few elements of explanation to understand what they meant; my understanding of the Kianga Energy Research Project was incomplete. During the week with Womenergy and the other Research Groups, I found some of the missing pieces of the puzzle. Ironically, the feeling was reciprocal: after I presented the Kianga Energy Research Project on behalf of the Research Group 5, Womenergy's leaders expressed satisfaction and relief to understand, at last, what the project was about and how it worked. Indeed, the elements the Research group 5 sent me to prepare for the workshop (a concatenation of slides made by different people) were overly centered on the qualities of RCTs and on specific details of the experiment, but there was no overview of the project. I translated this material into a more digest and understandable version. This exercise of mediation revealed the gap separating the Research Group 5 from the other teams (which were all multidisciplinary) and from Womenergy, which had a completely different view on what evidence-based policy was.

A large part of the workshop was dedicated to training researchers to act as "policy entrepreneurs" able to efficiently weigh on decision-making instances. The research consortia financed by Womenergy were not only required to publish, but also to write policy narratives. We were trained to use tools such as the ROMA (Rapid Outcome Mapping Approach) and the PIF (Policy Influencing Framework). We had to fill in the empty cases of large matrices, define policy-influencing objectives for our respective projects. We had to provide demographic and institutional context about the countries where the different projects took place and to list the potential institutional partners we identified in these different countries. We discussed on our

different utilization of indicators and concepts: how did the different Research Groups defined and measured women empowerment? Could we create a shared glossary defining gender concepts? In Womenergy's vision of evidence-based policy, researchers should integrate a reflection about how they can use their result for policy-influencing purposes since the inception of the project, and not afterwards.

This was made even clearer during the bilateral meeting between Womenergy and the Research Group 5. I silently sat in a room while Samantha (Womenergy's head), and a couple of other members of Womenergy's international coordination had a video call with Veronica. The conversation was very tense. There was a recurring disagreement about what the Research Group 5 should focus on. Veronica argued that given the difficult circumstances affecting the team and reducing its capacities, they should dedicate all their time and energy to complete the experiment, so as to start cleaning and analyzing the data as soon as possible. Only afterwards, Veronica said, they would be able to offer the first results[138]. Womenergy's international coordination disagreed: the Research Group 5 committed to produce indicators, concepts, and relevant contents for policy-influencing: they had to deliver. Womenergy expected the Research Group 5 to deliver results that RCTs cannot produce: indicators, concepts, policy-influencing strategies. In this situation, the gold-standard qualities of RCTs fell completely flat: Womenergy did not need research to efficiently spend aid money but to be better equipped to improve its policy-influencing strategies. Womenergy's people wanted figures and statistics, but they especially wanted arguments, concepts, and indicators that could be operationalized in international meetings. Moreover, the Research Group 5 and Womenergy defended different temporalities for evidence-based policy: Veronica asked to close the doors of the laboratory for a while, to conduct her experiment undisturbed. Womenergy wanted to collect insights and descriptive data all along the duration of the research project.

I would like to conclude this presentation of Womenergy with a visual note. On the souvenir photo of the workshop, this is striking: the group is in majority composed of women of color. There are a lot African and South Asian citizens. Even amongst the participants who live in Europe, a high proportion is of African descent (including myself[139]). Most women wear

[138] Mary Morgan argues that economists no longer practice economics as "a verbal science, with questions, concepts, and a mode of reasoning all dependent on words" but a "tool-based science, using mathematics and statistics embedded in various kinds of analytical techniques" reasoning with models (2012).

[139] The principal investigator coordinating the five research projects on Womenergy's account, a British scholar in her sixties, showed a lot of enthusiasm for my Algerian background. She told me about an Algerian author she just read, wrote the title down for me and said she would like to discuss it with me later on. This may be anecdotal, but other elements make me think that this is rather characteristic of the general atmosphere.

colorful African or Asian outfits (boubous, saris), either because it is how they normally dress, or because (like me) they bought scarves and tunics during a group shopping expedition, between two workshop sessions. The head of Womenergy is a tall black woman, let us call her Samantha. She lives in the European city in which Womenergy is based but she was born and raised somewhere in Southern Africa. During the whole week, she wore elegant, tailor-made African outfits, a matched headwear, large jewelry and high-heels. This is also how she dresses whenever she attends international events. She commented on it during a talk on policy-influencing she gave: "Nobody ever sees my hair. There is a reason why I dress like this. People must understand from where I speak." Very deliberately, Samantha displays her femininity and her Africanity. At some point, a researcher affiliated with Womenergy joked and called her "Queen Samantha." She laughed and said: "he called me like this at the World Bank!" The souvenir photo looks like a statement. The group speaks English with a variety of accents. It looks like the people Womenergy is trying to empower. In a sense, Womenergy's member work as diplomats.

1.4. A multiform experimental project with a complex theory of change

The Kianga Energy Research Project is composed of several overlapping RCTs. The most basic RCT randomly selects half of the villages of the sample[140] into the "treatment group". In these "treated villages", Kianga Energy Ltd. created a micro-franchise, managed by four villagers. This basic RCT compares the population of the villagers who became micro-entrepreneurs to the population of the villagers who volunteered to become micro-entrepreneurs but who were eventually randomized into the control group. This first RCT evaluates the impact of micro-entrepreneurship: did people who became micro-entrepreneurs (and their families) fare better than the ones who did not become micro-entrepreneurs? This layer of the experiment is represented in light blue (fig. 13).

[140] I rounded the number of villages, both because it is part of my anonymization strategy and because it makes the structure of the experiment easier to read with even numbers.

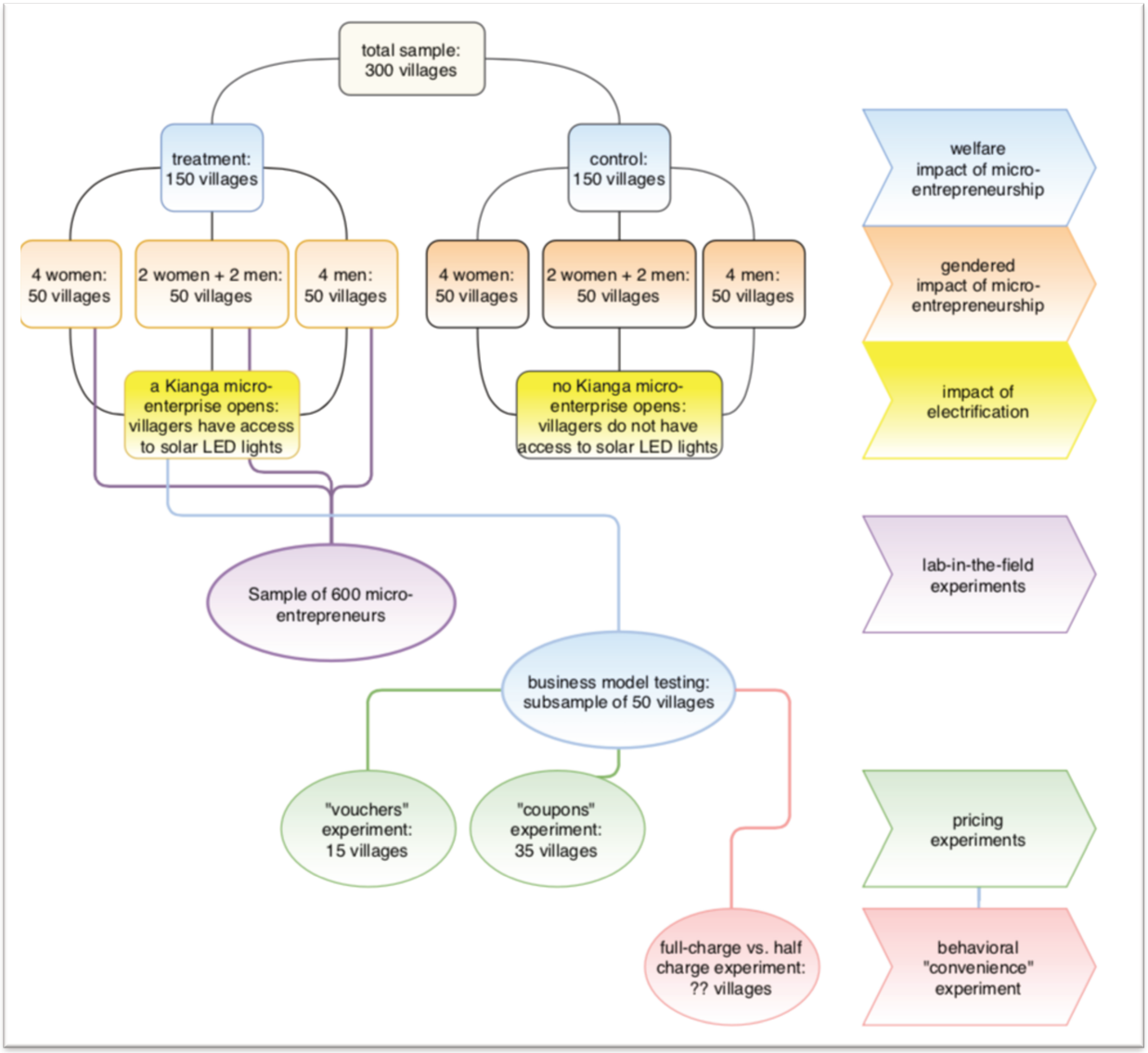

Figure 13: A synoptic view of the Kianga Energy Research Project

Another dimension of this first, basic RCT is the evaluation of the impact of a new source of lighting: how do families who have access to solar lights fare on average with regards to similar families who do not have access to solar lights? Initially, the Research Group 5 had planned to survey villagers on the phone, so as to collect data not only from the micro-entrepreneurs – which is normally the case, but also from users (and their counterparts in the control group). The phone survey eventually did not happen. As a result, the data about the impact of the solar

lights was only collected from the micro-entrepreneurs[141]. This layer of the experiment is represented in bright yellow (fig. 13).

The second layer of the experiment is represented in the peach-colored line (fig. 13): both the control and the treatment groups are broken down by gender composition of the micro-enterprise. Or it would be chronologically more exact to say that the sample is first randomly divided in three even sub-samples, corresponding to specific gender assignments. In a third of the villages, people have no choice but appointing four women to run the micro-enterprise. In another third of the villages, the micro-enterprise must be run by four men. In the last third of the villages, the micro-enterprises are to be managed by two women and two men. Then, each sub-sample is randomly divided into a treatment and a control group. This is supposed to enable the identification of gendered analysis of micro-entrepreneurship. Do women "perform" as well as men in business? Do households benefit more from having a male or a female family member involved in a micro-enterprise?

On the top of this, Kamilla, the PhD candidate in behavioral economics, conducts "lab-in-the field" experiments on the population of the villagers who became micro-entrepreneurs. I provide more explanation on that research methodology later on in the present chapter, but for now, let me just indicate that this component of the project does not rely on a randomized controlled design. It is geared at eliciting the micro-entrepreneurs' preferences through games: how competitive are they? How much do they like to take risks? The aim is to exhibit behavioral factors for the performances of the micro-businesses. This is represented on purple on the diagram (fig. 13). Finally, the green and red parts of the diagram represent the price-testing components of the experiment. Although they concern a limited number of villages, they are key to the Kianga Energy Research Project. The next chapter of the thesis is entirely dedicated to these experiments, which test various prices for a solar light (the "voucher" experiment) and for a battery charging service (the "coupon card" experiment).

These distinct components of the project respond to each other in a complex theory of change[142] that is disseminated in the various documents authored by members of the Research group 5. In the diagram below (fig. 14), I propose a visual synthesis of the theory of change.

[141] On a side note, this is probably not very satisfying methodologically. If the only households interviewed about the solar lights are also those who are involved in the micro-enterprise, it might prove difficult to disentangle the impact of the micro-enterprise from the impact of the light as a technical artefact offering new possibilities in the household.

[142] Theory of change is an organizational tool, but also a common way of referring to the causal mechanisms underlying a project.

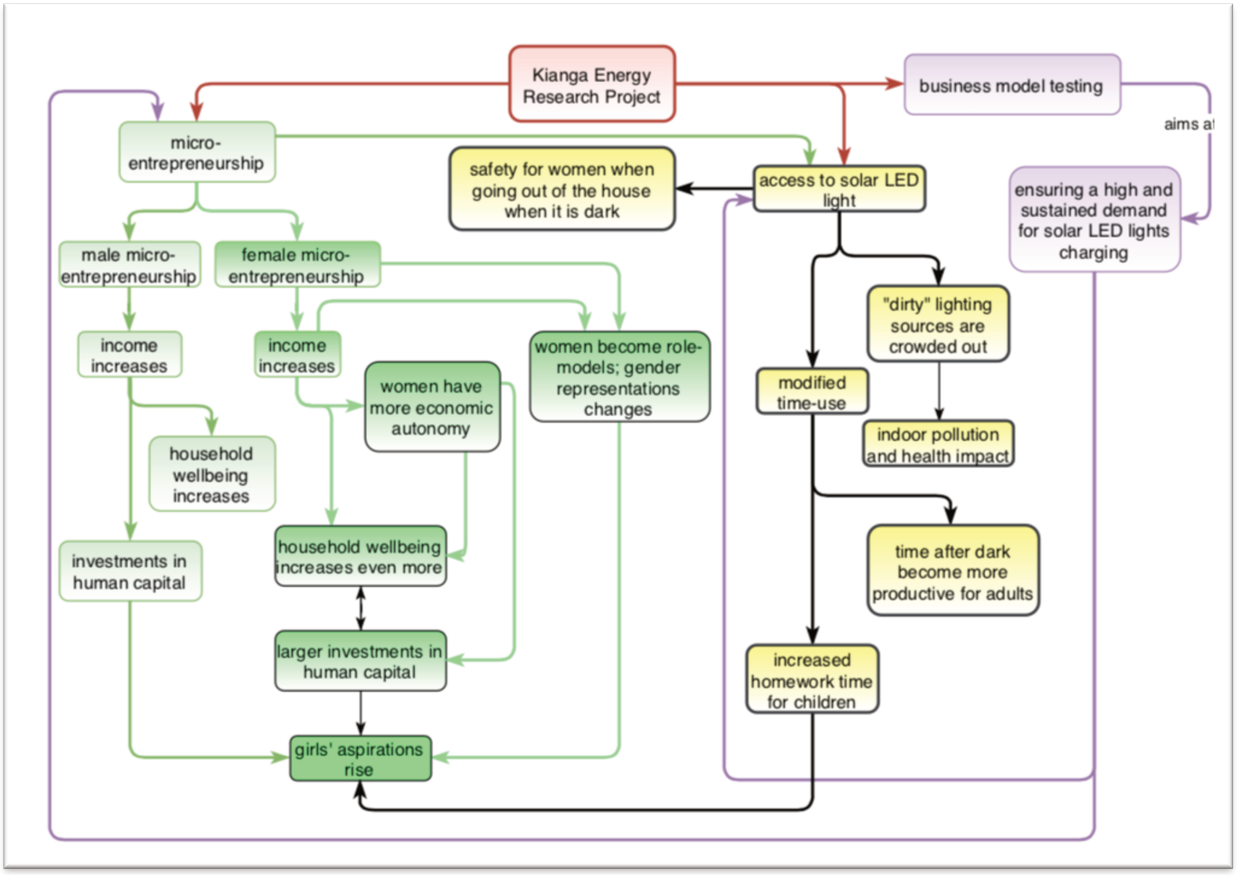

Figure 14: A representation of the theory of change underpinning the Kianga Energy Research Project

The most important causal channel emphasized by the Research Group 5 is the impact of micro-entrepreneurship, which provides rural households with extra income. This income is supposed to be spent in ways that increase the well-being of the members of the household (e.g. food purchases). It is also supposed to endow parents with more resources to invest in their children's health and education. This causal channel is represented in two shades of green (fig. 14). The version in which the micro-entrepreneur is a man is represented in light green. In the dark green causal chain, the micro-entrepreneur is a woman. The expected impacts are similar but larger and more complex. The extra income derived from the micro-enterprise is better spent, because women tend to make more family-altruistic choices. Moreover, a positive impact is expected on women's status and autonomy. This is supposed to inspire the younger generations, who will be exposed to female role-models.

The yellow causal chain represents the expected impacts of the solar lights. First, all the members of a household, adults and children, are supposed to make a more productive use of the hours after dark (working, doing house chores or studying). Second, the solar lights are

supposed to displace candles and kerosene lamps, which result in indoor air pollution and associated pathologies. Finally, women and girls are supposed to feel safer when going out of the house at night. The purple causal chain (fig. 14) concerns the business-model testing component of the experiment; it consists in helping Kianga Energy Ltd. to set prices such as the micro-business are profitable and the customers can afford the lights and battery-charging services. Charging the right prices is supposed to enhance the other causal channels: if the prices are right, then more villagers will enjoy clean lighting, and the micro-businesses will be more profitable.

The components of the Kianga Energy Research Project regarding the distribution of low-cost solar lights are analyzed in the next two chapters. The present chapter focuses on the way the Research Group 5 problematizes the impact of micro-enterprises (the green part of the diagram, fig. 14). In the next two sections, I analyze the epistemic and political gestures accomplished by the Research Group 5 around the notion of micro-entrepreneurship, and more specifically on female micro-entrepreneurship.

*

This section was dedicated to discuss different perspectives on RCTs as evidence-based policy instruments. The communication of the public figures of the RCT movement is riddled with ambiguities. The randomistas claim to be the decision-makers apolitical advisors, while taking political stances rooted in their use of microeconomics and behavioral economics. The Research Group 5 and Womenergy have misaligned visions of what evidence-policy should be, and different expectations of what type of knowledge should be produced in the Kianga Energy Research Project. While the Research Group 5 plans on releasing quantified results only after the completion of the experiment and the statistical analysis of the data, Womenergy expects to receive insights and results all along the research process. Finally, the Kianga Energy Research Project tentacular structure, with several nested RCTs forming one large experimental project, may be regarded as a way to conciliate the goals and interests of the different protagonists involved in the project.

Section 2: What is a successful micro-entrepreneur?

This section looks into the details of the epistemic and political operations accomplished by the economists around the figure of the micro-entrepreneur. The first sub-section reflects on the

advent of micro-enterprise, and on its promotion as a potential way out of poverty. The second sub-section discusses the way micro-enterprises are turned into suitable experimental objects. The third sub-section describes how the Research Group 5 measures the success of micro-enterprises. The last sub-section discusses the figure of the successful micro-entrepreneur shaped by the Research Group 5.

2.1. Micro-enterprise: a post-development turn?

2.1.1. The emergence of micro-enterprises as part of a paradigm shift in development

The micro-enterprise is a well-established object in the international development landscape. Since the late 1990s – early 2000s, it has been championed as a suitable income-generating option for the poor. At that time, the World Bank, amongst other major international organizations, was shifting from promoting a state-led development based on infrastructure modernization and the formalization of the economy, to championing community-based, NGO-led poverty-alleviation interventions. Indebted nation-states, weakened by the structural adjustment policies (SAPs) imposed on them by the International Monetary Fund in the 1980s, stopped providing public services and employment to their citizens. This dismantlement of the public services was reinterpreted as an opportunity for the poor, who had long fascinated anthropologists for their resourcefulness and ability to invent their livelihoods, to unleash their entrepreneurial potential. Celebrated among development practitioners, micro-enterprises are also questioned by scholars: their effectiveness as a poverty-alleviation strategy is described as the result of an "enthusiastic tendency to overemphasize their achievements" (Midgley, 2008). Anthropologist Julia Elyachar, who studied the work of NGOs promoting the creation of micro-enterprises in Cairo, in the late 1990s, qualifies the micro-enterprises turn as an "antidevelopment development." Informal businesses and petty trades, previously seen as survival practices and signs of backwardness, were reengaged with and praised as empowering endeavors (Elyachar, 2002). She underlines that money flew in the country in the form of grants, concessional loans or charitable donations only to be transformed, through intermediaries such as commercial banks or NGOs, into business money, that was expected to fructify. In a similar spirit to Elyachar's "antidevelopment", other authors point to the fact that the rise of the figure of the poor entrepreneur is the flipside of the disappearance of the figure of the poor worker (Prentice, 2017). This era (ours, still) is characterized by a disinvestment of the states, and by the apparition of new actors in charge of development. Citizens are subjects to shifting

expectations: they are exhorted to "deploy knowledge and expertise in their own lives", and to become responsible for their own subsistence. This array of entangled evolutions characterizes the "afterlives of development" (Rudnyckyj and Schwittay, 2014).

2.1.2. Micro-entrepreneurship as a transformation of the self

Since the early 2000s, NGOs dedicated to helping the poor in creating micro-enterprises (as well as microfinance institutions, supposed to provide them with capital) have flourished. Such structures are often caught in an ambiguous position about their role. One the one hand, they may explain their mission as simply revealing to the poor their already-existing, natural entrepreneurial dispositions (Dolan, Johnstone-Louis and Scott, 2012). On the other hand, entrepreneurship is seen as the result of a "conversion" process (Dolan and Rajak, 2016). Idle youths, disempowered women, unemployed adults are "repurposed" into self-reliant, empowered entrepreneurs, at the cost of an intense work of transformation of the self[143]. Bodies are required to go through a metamorphosis: elegant outfits, straight posture, clear voice and smiling face, contribute to a more professional appearance. A key element in that conversion is the profound modification of one's time-management habits: punctuality, longer working hours, ability to forego immediate satisfaction for future rewards are strongly encouraged (Dolan and Rajak, 2018). Through adopting a stronger work ethics, and embracing a more self-disciplined lifestyle, the micro-entrepreneurs are regarded as achieving moral improvement and obtain more consideration within their community. This is further reinforced in cases, quite frequent, when micro-entrepreneurs sell "social goods" especially designed to improve the living conditions of the poor (typically, solar lights, clean cookstoves, bed nets, etc.).

2.1.3. Micro-enterprises promotion as a predatory practice

Organizations promoting micro-entrepreneurship, as well as other formal actors interested in marketing towards the poor, often openly admit to take inspiration from existing informal activities (e.g. door-to-door selling, saving groups). Scholars have criticized such mimetic approaches as economic predation practices. Not only do they copy the practices of informal actors, but in so doing, they may crowd out informal intermediaries (Meagher, 2018). For

[143] Surprisingly, Dolan and her coauthors do not cite Michel Foucault's works, whereas the mechanisms they describe are reminiscent of concepts such as subjection through disciplinary techniques: "exercising upon [the body] a subtle coercion, of obtaining holds upon it at the level of the mechanism itself – movements, gestures, attitudes, rapidity: an infinitesimal power over the active body. Then there was the object of the control: […] the economy, the efficiency of movements, their internal organization […]. Lastly, there is the modality: it implies an uninterrupted, constant coercion, supervising the processes of the activity rather than its result and it is exercised according to a codification that partitions as closely as possible time, space, movement." (Foucault, 1995)

instance, techniques of micro-packaging used by multinational corporations to retail goods to the poor (e.g. single-use shampoo packets, single-serve instant coffee doses) short-circuit smaller actors, such as mom-and-pop shop owners, who used to buy products in bulk and repackage them themselves. Development scholar Kate Meagher further insists on the fact that the many attempts at tapping bottom of the pyramid markets free-ride on a myriad of informal networks carefully maintained by the poor. These networks of relationships, trust and communication, aimed at maintaining channels through which information and resources can flow, are sometimes described as "phatic labor[144]" (Elyachar, 2010) or "people as infrastructure" (Simone, 2004). This social infrastructure is heavily used by for-profit private actors, which amounts to dispossessing people from something they produce and that should be regarded as a commons (Elyachar, 2012).

When reading critical anthropologists, it seems clear that the micro-enterprise, among other inventions, pertains to a decentralized, market-based approach to development that is easily reconcilable with the use of RCTs. Indeed, there have been quite a lot of RCTs applied to evaluating the impact of micro-enterprises[145]. Innovations for Poverty Action for instance, dedicates a page of its website to micro-enterprise studies, with several dozens of experiments listed under that category. The page is introduced with the following lines:

> "Many people in developing countries are either self-employed or employed in small enterprises (roughly ten or fewer people). IPA's research in this area investigates solutions to help these businesses thrive and grow through access to finance, skill-building, and encouraging first-time entrepreneurship."[146]

International initiative for impact evaluation (3ie), an organization that manages a repository centralizing the results of RCTs conducted all over the world, lists 369 experiments focusing on micro-enterprises[147]. The Research Group 5 thus walks a well-trodden path.

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[144] This term extrapolates on Malinowski's notion of phatic communication, referring to the chit-chat and gossips that have no other function than creating and maintaining social relationships.

[145] I mentioned in the introduction that Esther Duflo considers micro-entrepreneurship to be a lesser solution compared to wage work. This is not incompatible with the fact that micro-enterprise is an object of investigation for the randomistas: first, because her colleagues may differ; second because the randomistas' pragmatism would anyway lead them to test micro-entrepreneurship in the absence of a better option.

[146] https://www.poverty-action.org/topics/micro-enterprise (last accessed March 30th, 2020)

[147] Source: results of a manual search on 3ie's repository, that lists 3774 impact evaluations in total https://developmentevidence.3ieimpact.org/search-results?search_query=eyJzZWFyY2hfdGV4dCI6IiIsInBhZ2UiOjEsInNvcnRfYnkiOiJyZWxldmFuY2UiLCJ1c2VyUXVlcnkiOiJtaWNyb2VudGVycHJpc2UgT1IgbWljcm9lbnRyZXByZW5ldXJzaGlwIE9SIG1pY3JvLWVudGVycHJpc2UgT1IgbWljcm8tZW50cmVwcmVuZXVyc2hpcCIsImluaXRpYWxGaWx0ZXIiOnsidHlwZSI6IlNlbGVjdCBvcHRpb24ifSwib3B0aW9uYWxGaWx0ZXJzIjpbXX0=&page=1&per_page=50&sort_by=relevance&filters= (last accessed April 25th, 2020)

2.2. How to turn micro-enterprises into an object of experiment?

The first step in following the epistemic work of the Research Group 5 is to describe the experimental design they created. How do the economists adapt Kianga Energy Ltd.'s usual operations to the specific needs of the experiment? The experiment was designed in a close partnership with Kianga Energy Ltd., in two different districts where the company had already planned to roll out its operations. Kianga normally targets off-grid villages, in which there is no competing solar energy provider already operating.

2.2.1. Micro-entrepreneurs' groups formation

Kianga Energy Ltd.'s expansion model consists in creating one unique micro-enterprise per village, usually composed of four people – although groups may include as little as two and as many as ten people[148]. The micro-entrepreneurs pay a "commitment fee" (40.000). In exchange, they receive the equipment needed to produce electricity and to stock it in order to sell it to the end users (a solar panel, a pedal-generator, and a portable battery). Kianga Energy Ltd. usually leaves the formation of the micro-entrepreneurs' group to the village leaders, who are tasked with selecting four people corresponding to the following criteria: the chosen candidates ought to be considered trustworthy by the community, and one of them at least ought to live in a centrally-located house. Of course, this may give raise to nepotism, or micropolitics in the sense of French anthropologist Olivier de Sardan (Olivier de Sardan, 1993) – but the village leaders are unlikely to have a large margin of discretion. Indeed, the commitment fee charged to the micro-entrepreneurs screens out many potential candidates, who are either unable or unwilling to spend money. There are also numerous cases in which villages collectively refuse or fail to form micro-entrepreneurs' groups. It happens for instance when nobody in the village is willing to invest money, or when the villagers are not interested in the rudimentary lighting solution proposed by Kianga Energy Ltd. Competitors offer larger devices, such as home solar systems – in that case, each house is equipped with its own solar panel – or larger lights with built-in photovoltaic cells.

Within the experiment, the process is slightly different. First, for uniformity purposes, the number of micro-entrepreneurs per group is required to be four, and the four entrepreneurs have to come from different households (two spouses for example are not allowed to take part in the micro-enterprise together). Cases in which the micro-entrepreneurs' group ends up being

[148] Source: short paper published by the Research Group 5 together with another team of researchers also involved with Womenergy.

composed of less than four people (due, for instance, to the defection of one group member) are removed from the experimental sample. There is a further constraint (further discussed in section 3) when forming the group: according to the result of a random draw performed in EvaP's office, the village must choose either four women, four men, or two men and two women. Then, among the villages that were willing and able to create a micro-entrepreneurs' group ready to spend 40.000, only half is selected into the treatment group. The other half is assigned to the control group: Kianga Energy Ltd. commits not to serve them until the end of the experiment. The experimental design is thus quite simple: it consists in comparing households in which someone becomes a Kianga micro-entrepreneur to similar households in which nobody becomes a Kianga micro-entrepreneur. This branch of the experiment is the most basic one. It asks: what happens in a household when one of its members becomes a micro-entrepreneur, which would not happen otherwise?

2.2.2. A sustainable source of income?

The creation of village-level micro-enterprises is qualified as "employment" in the title of one of the Kianga Energy Research project's publicly available descriptions[149]. But what is employment when there is no wage (and certainly no social security benefits) associated with the occupation? When the employed individuals are required to pay a "commitment fee" to be recruited, and prepay a fee on every sale they make? The term "employment" is not just used once, but repeatedly, in an entry published on the American Economic Association RCT online repository – and more sparsely in other documents. Elsewhere (e.g. in the lab-in-the-field paper) the term "employment" is qualified with the prefix "self". What does the Research Group 5 mean by employment? First, it is associated with the notion of technological transfer. It represents an upgrade compared to subsistence farming, and is synonymous with technical and social progress. The micro-entrepreneurs, despite the remoteness of their villages, where there is so little opportunity, are networked with a capital city-based business, through a constant flow of information travelling on the GSM network. Second, "employment" is regarded as a "sustainable source of income"[150]. By using the term "employment" in such a minimal meaning, are the economists contributing to the "antidevelopment" or post-development turn described (and deplored) by the anthropologists working on micro-enterprises? The use of the term "employment" to describe such a precarious form of activity is one instantiation of the political

[149] Source: American Economic Association RCT registry, entry 1.

[150] Source: ibid.

work accomplished by the economists of the Kianga Energy Research project. They participate in a larger definition struggle; they contribute to the political evolution of concepts such as employment.

Earning extra income is the main benefit expected from participating in a micro-enterprise. But how sustainable is the income generated by the Kianga micro-enterprises? The contract signed between each one of the entrepreneurs and Kianga Energy Ltd. is akin to a franchise contract, and Kianga Energy Ltd.'s website mentions franchises, rather than employment. The four micro-entrepreneurs do not earn any fixed income. They collectively earn a 50% commission on each recharge they sell. More accurately, they first buy "units" to Kianga Energy Ltd., at the price of 50 per recharge. Indeed, the charging device is disabled with a remote locking mechanism, and cannot be used unless the micro-entrepreneurs type in a code that they receive by text message, only after sending a prepayment for a given number of units through a mobile money service. Then, they sell each prepaid recharge at the price of 100, and as a result, earn 50 on each recharge they sell. The micro-payments made by the micro-entrepreneurs to Kianga Energy Ltd. are part of a pay-as-you-go, or lease-to-own, scheme: they add up and are counted towards the reimbursement of the charging equipment. When the micro-entrepreneurs have entirely paid off their equipment to Kianga Energy Ltd., the device is permanently unlocked (still remotely) and the micro-entrepreneurs no longer have to share the proceeds of their sales with Kianga Energy Ltd. The price of the recharge then drops from 100 to 50 for the end customers. This is anyway how things are supposed to happen, according to Kianga's plans[151]. I could not find any information regarding whether any of the Kianga micro-enterprises in the country actually reached the point when the micro-entrepreneurs become the full-fledged owners of the equipment. However, a note published on the website of a large microloan platform[152] that partnered with Kianga Energy Ltd. suggests that micro-entrepreneurs were on average rather unsuccessful on the longer-term. The micro-loans platform lent money crowd-sourced in rich countries to almost 500 micro-enterprises (outside of the experiment under study in this dissertation) to help them purchase the equipment from Kianga Energy Ltd. upfront (i.e., without going through a leasing period). In the beginning of the year 2019, the agreement between the microloan platform and Kianga Energy Ltd. was terminated, with a high default rate. The microloan platform explains this high default rate by two factors: a devaluation of the

[151] Source: a description of Kianga's business model by the Research Group 5 in the final report addressed by the Research Group 5 to Womenergy.

[152] Anthropologist Anke Schwittay analyzes the role of microloan platforms in the financialization of poverty-action (Schwittay, 2014).

national currency (the loans were issued in US dollars) and a very low demand for battery-charging services (Kianga LED lights or cellphones). The micro-entrepreneurs could not find a clientele with enough purchasing power, or willingness to pay for battery-charging services.

2.2.3. Incorporating public subsidies into the business model

That becoming a micro-franchisee of Kianga Energy Ltd. amounts to earning a sustainable income is thus more than uncertain, and the Research Group 5 is well aware of that uncertainty. They dedicate one of the most sophisticated branches of the experiment to tackle the question of sustainable pricing, in order to stimulate the demand for charging services (thoroughly analyzed in chapter 4). Moreover, to kickstart the demand in the villages of the experiment, the Research Group 5 purchased lights from Kianga Energy Ltd. These lights were distributed for free during public lotteries held in each village (to the exception, recounted at length in chapter 4, of the villages where pricing experiments were implemented). The researchers bought 100 lights per village – most villages including no more than 100 households, the research project roughly equipped every household with one light, "to minimize the probability of business failure"[153]. Outside of the experiment, Kianga's micro-entrepreneurs first need to sell lights to their fellow villagers in order to build their clientele. A possible interpretation of this massive purchase of lights is that the Research Group 5 is trying to make the experiment look successful at any cost, by artificially supporting demand, and thus improving the micro-enterprises results. The literature criticizing the use of RCTs (Bédécarrats, Guérin and Roubaud, 2019 ; Ravallion, 2019), as well as the randomistas themselves (Banerjee and Duflo, 2017b), warn against a possible publication bias distorting the experimental results. Successful experiments being easier to publish in scientific journals and to publicize to a general audience, researchers might be tempted to boost the success of their experiments, at the risk of producing artefacts. It is not the interpretation I wish to emphasize here. Rather, I contend that the Research Group 5 tests an alternate version of Kianga Energy Ltd.'s usual business model; a version in which the upfront cost of purchasing a LED light is fully subsidized by public funds: this can be regarded as a political statement discreetly incorporated into the experiment. The need for public subsidies to equip the ultra-poor with solar lights is both a hypothesis and a formal result obtained through experimentation (further analyzed in chapter 4). It is also a material and political statement made by the economists when they dedicate a share of the experimental budget to make it happen.

[153] Source: final report addressed by the Research Group 5 to Womenergy.

Even in that favorable configuration, when end-users are given a free LED light, demand for charging services is not high. At the time of writing, I could not find any precise result describing the average sales of micro-enterprises. However, in all their publications, the researchers insist on the very high price-elasticity of demand for charging services, meaning that even a very slight increase in the price of the service results in a large drop in demand. Unsurprisingly, extremely poor households are extremely price-sensitive. This painfully reminds how tricky the question of the role of the private sector in extreme poverty-alleviation – precisely the issue that the Research group 5 was mandated to investigate – is. Kianga Energy Ltd., since its inception (with seed money from the World Bank), has been regularly replenished with public or philanthropic money. Thus far, it has failed to reach its stated objective and switch to a profitable for-profit operation.

2.3. How to measure the success of micro-entrepreneurship?

As already discussed in the previous chapter, the thickness of RCTs lies at least as much in the heavy data collection apparatus as in the experimental intervention itself. Although the micro-entrepreneurship impact evaluation is one of the simplest and most straightforward branches of the experiment, it gives rise to two distinct data collection methods. On the one hand, the household survey enables the researchers to collect data about the living standards of the household. The goal of the statistical analysis conducted by the Research Group 5 is to check whether the living conditions have improved to a larger extent in the households assigned to the treatment group than in the households assigned to the control groups. This reasoning is very classic in RCTs: it starts with a sample of households that are similar on average (i.e., households that include a person who is willing and financially able to participate in a micro-enterprise) and thus, comparable. This population is randomly divided into a treatment group and a control group: only half of the aspiring micro-entrepreneurs are eventually put in touch with Kianga Energy Ltd., but all of them are surveyed just before the inception of the micro-enterprises (baseline survey), and about18 months after (endline survey). Both surveys are administered with the exact same questionnaire. On the other hand, the researchers use Kianga Energy Ltd.'s administrative data (i.e. the sales record) to measure the performance of each micro-entrepreneurs' group. In this case, there is no data collected on the control group: Kianga's administrative data exist only for the treatment group. The comparison between treatment and control groups, at the heart of RCTs, is not possible. In this case, micro-entrepreneurs in the treatment group are compared to each other (men vs. women, all-female

vs. all-male vs. mixed groups). This will be treated in more details in the last section of the present chapter.

The survey questionnaire is extremely long and detailed, and virtually every variable defined in the questionnaire pertains to the very broad notion of "welfare". But according to the way results and conclusions are presented and dispatched across the different publications, the Research Group 5 seems to have partitioned welfare impacts in the following manner. Some variables (typically, the changes in time use and the health impacts of switching from a "dirty" to a "clean" lighting source) are analyzed as a result of the access to LED lights. Other variables (typically, all the variables concerning the welfare of the children of the household) are analyzed in a gendered perspective: female entrepreneurs' households are compared to male entrepreneurs' households. This will be treated in the next section of this chapter. The outcomes that are analyzed as being the result of micro-entrepreneurship pertain to the economic situation of the household. The researchers estimate the increase in consumption and expenditure levels that can be imputed to access to a new source of income.

The sections dedicated to describing the economic situation of the households come very early in the questionnaire, which is a sign of their importance. It is a common practice to place important questions in the beginning of the questionnaires – respondents tend to be less and less focused, and to grow more and more impatient with the questions as time passes. The first module concerns the assets owned by the household, starting with the house. The enumerator is first supposed to observe the house of the respondent and to specify the materials in which it is built, which provides an indication of the living standard of the household: people living under a thatched roof are likely to be better off than people living in a shack, but less affluent than people living under a metal roof. The respondent is later on asked how many rooms there are in the house. A little surprisingly, the question that comes immediately after the description of the house concerns mobile phone ownership in the household. The respondent is asked how many mobile phones there are in the household, how frequently the phones' batteries are recharged, how far from the house, and at which cost. A possible explanation for inserting this question under the household's assets assessment is that a mobile phone is likely to figure among the most expensive objects possessed by ultra-poor households[154]. Also quite surprisingly, there is no question about cattle ownership, in a country where cows can be used

[154] On a separate note, this question might be part of a proto-market study. It is obviously interesting for the researchers (and for Kianga Energy Ltd.) to estimate mobile phone ownership in the villages of the experiment, as charging cellphones is one of the services sold by Kianga's micro-enterprises. Will the micro-enterprises stimulate the purchases of cellphones, by providing people with a closer source of power?

as assets, and given that cow ownership is regarded as source of pride and a sign of higher social status.

The next bloc is composed of a list of straightforward, but also difficult questions: what was the household's total income in the past month? What was the respondent's income in the past month? How much of it the household was able to save, how much was spent overall? How much liquidities are available in the household at the time of the interview? As discussed in the previous chapter, enumerators reported that respondents very often tend to say they have no savings and no cash available. At the time of the baseline survey at least, as the potential micro-entrepreneurs have not received anything from the project yet, it makes perfect sense for them to underestimate their resources – especially if the interview is analyzed as a social interaction in which the respondents, in a position of relative weakness, must protect themselves and their own interests (Salamone, 1977). In underreporting their resources, they might hope to obtain more inputs from the project, or to make sure they will not be asked to contribute more money towards the micro-enterprise.

As often in anti-poverty policy evaluation, the researchers are not only interested in how much extra income people earn because of the micro-enterprise, but also in how they spend their earnings. The Research Group 5 found that weekly food expenditures significantly increase in the treatment group. This is estimated on the basis of data collected with a detailed module of the questionnaire exploring the household's food consumption. It takes the form of a detailed list of food items. For each food category, the enumerator asks if the household has consumed any over the past week, and if yes how much it cost to purchase it. Historian Samir Boumediene writes that nothing is more political than what one ingests. "Community gathers around what it acknowledges as being ingestible, and it is divided and hierarchized by determining who can swallow [what], and who cannot." (Boumediene, 2016, my translation). As mentioned in the previous chapter, questions revolving around food consumption may be extremely sensitive in the country where the experiment takes place – there is a strong cultural taboo about public food consumption that might extend to commenting one's family food intake. Especially when most respondents' diet is not varied and extremely constrained by poverty, and it might be quite unpleasant, or even shocking for them to hear the enumerator listing all the foodstuff that they cannot afford. Questionnaires create a political relationship in two ways. First, they establish a power relationship between the entity asking questions and the entity expected to answer them, even when it is embarrassing or unpleasant. Second, questions are not only a means to obtain answers, they are also statements that are conveyed to the respondent, and that potentially

provoke reflexive thoughts or affective reactions. In a sense, the questionnaire is also the locus of a micro-diplomacy.

Finally, non-food items are listed and sorted by frequency (weekly, monthly, quarterly and yearly). The researchers build in the questionnaire the adequate frequency for the different types of expenditures. Telecommunications and tobacco, for instance are listed under weekly expenses, whereas personal care and transportation are listed under monthly expenses. Schooling fees and health expenditures are assumed to be better measured as quarterly expenses, and finally higher education and vehicle (bicycle, motorbike) purchases are listed under the yearly category. An increase in the level of household consumption is described as "one of the best measures of poverty"[155], so any increase is interpreted as a sign of the success of the intervention. But, as often when it comes to the consumption of the poor, the researchers also examine closely how the increase is distributed: which expenditure items increase the most? As this is analyzed in a gendered perspective, I leave it for the third section of this chapter, which focuses on women empowerment.

The Research Group 5, together with Kianga Energy Ltd., also developed an automated way of collecting data on the "performances" of each micro-enterprise. Contrary to the household survey, that requires repeated, long, complex, error-prone and expensive human interactions, the automated GSM data collection, once successfully designed, requires remarkably little human intervention. Each micro-enterprise's battery (the SpiderCharger[156], described in chapter 5) is equipped with a SIM card, which enables the device to communicate with the company's headquarters at all time, via the GSM network. Each time micro-entrepreneurs charge a Kianga light, some data is automatically transmitted to the server of the company, including the serial number of the light that is charged, the date and exact time at which it is charged. This data is collected and transmitted simultaneously. There is no need for hiring fieldworkers, and it is not even necessary to rely on the micro-entrepreneurs' bookkeeping. The non-human component of the micro-enterprise is key in collecting sales data. It is used both as an indication of each household's demand (as each light's serial number is associated with one household), and as an indication of the "performances" of the micro-entrepreneurs. This notion of performance used by the economists to describe the sales volume should be questioned,

[155] Source: final report addressed by the Research Group 5 to Womenergy.

[156] Anonymized commercial name of the device.

especially when Kianga's business model leaves very little room for personal initiative. This is the object of the next sub-section.

2.4. What are the qualities of a good micro-entrepreneur?

The Kianga Energy Research project is particularly ambitious in the economists' attempt at not only measuring, but also explaining the "performances" of the micro-entrepreneurs. All three principal investigators of the project specialize in behavioral economics, a branch of economics that focuses on the psychological component of economic decisions. In line with the mainstream theories of the enterprise in economics, the Research Group 5 assumes that a successful entrepreneur needs to be competitive and willing to take risks.

2.4.1. Lab-in-the-field experiment

To measure competitiveness and attitude towards risk, one member of the Research Group 5 uses a very sophisticated device: a lab-in-the-field experiment. This methodology is a very recent development in behavioral economics. It combines two styles of economic experiments: field experiments, such as the one that is discussed in the present dissertation, and laboratory economic experiments. The latter consists in inviting voluntary subjects into a laboratory to participate in games, usually on computers. They may play against the machine, or in collaboration (or competition) with other human subjects. They usually start with a given amount of money provided by the experimenters. Then, according to their performances and decisions, they may earn more money, or lose their initial ante. Economic experiments may be games, but are played with real money: participants who earn money in the lab walk out of the lab with it. Lab experiments allow testing economic decision-making patterns in a controlled environment. However, they are typically conducted on a population of students, often in economics, which acutely raises the issue of the external validity of such experiments. To bridge that gap,

> "[lab-like field experiments] create a 'lab' in and draw participants from the field in order for them to perform *laboratory* tasks that are *not* part of their day-to-day environment" (Viceisza, 2016, original emphasis but precision between brackets is mine)

This is supposed to bring the best of both worlds:

> "We define a lab-in-the-field study as one conducted in a naturalistic environment targeting the theoretically relevant population but using a standardized, validated lab paradigm. Targeting the relevant population and setting increases the applicability of

> the results. Employing a standardized paradigm permits the experimenter to maintain tight control while allowing for direct comparisons across contexts and populations. Importantly, the use of lab-in-the-field is an important additional tool in understanding preferences in the wild that could be employed alongside traditional field work." (Gneezy and Imas, 2016)

In the Kianga Energy Research Project, the lab-in-the-field experiments are conducted by one of the three principal investigator's PhD student. They are mentioned in many documents published by the Research Group 5, and thoroughly described in a working paper published recently. Almost three quarters of all the micro-entrepreneurs who participate in the Kianga Energy Research project accepted to participate in the lab-in-the-field experiment – they were compensated for their time and travel costs. They were gathered in classrooms to participate in games. One experiment focused on competitiveness, and the other on attitude towards risk.

2.4.2. Competitiveness

The Research Group 5 puts a lot of efforts in measuring competitiveness, through a sophisticated lab-in-the field experiment. However, there is a missing link in their work: they provide very scarce explanation to establish the link between competitiveness and success in the case of the micro-enterprises they study. They merely state the importance of competitiveness for "successful business growth" in general. But in the case of the Kianga Energy Research Project, the role of competitiveness is unclear. Indeed, Kianga Energy Ltd. only creates micro-enterprises in villages where there is no established competition. Moreover, in areas where Kianga has rolled out its operations, it is likely that the neighboring villages already have their own Kianga micro-enterprise. The four micro-entrepreneurs do not need to compete with a different energy provider selling similar services, and they have no market to conquer beyond the borders of their own village. What use is there for competitiveness in such a setting? The details of the lab-in-the-field experiment suggest that micro-entrepreneurs managing a point of sale together are supposed to be competing… with each other.

The participants are first asked to solve simple addition problems in five minutes. For each problem correctly solved, they earn a small reward (say, 20): they first compete with themselves, so to speak. Then, they are given a similar set of problems to solve, but this time, they are in competition with three other participants in a tournament. The participant who manages to solve the most addition problems is declared the winner, and for each problem solved, she or he earns three times as much as the first round's reward (60), whereas the other contestants earn zero. Once the participants have gone through both competition forms

(compete with oneself and earn 20 per correct answer, or compete in a tournament with others and earn 60 or zero per correct answer, depending on one's position in the tournament), they enter a third round of problem solving. Then, they are allowed to choose if they prefer to compete with themselves or to enter the tournament. In the latter case, they reveal themselves as willing to enter competitions[157]. The authors found that performance (in this case, the number of addition problems correctly solved) significantly increases under the tournament reward scheme, which seems to support the claim that competitiveness increases performance.

But how to understand that result in the context of Kianga's micro-enterprises? What would it mean to compete among fellow business managers, when there is only one charging equipment for the four micro-entrepreneurs? What about the cohesion of the group over time? How are the micro-entrepreneurs supposed to share their earnings if they compete with each other? What about the public image of the micro-enterprise? These questions are left unasked, and suggest that the Research Group 5, despite a commitment to empirical, applied work, failed to create adherence between theory-testing and real-world issues. And how does solving simple math problems compares with selling a service to ultra-poor clients? By overemphasizing the micro-entrepreneurs' efforts in explaining the success of the micro-enterprises, the economists temporarily obscure the fact that the light-owners are extremely price-sensitive and cash-constrained: this is not easily overcome by micro-entrepreneurs, regardless of how competitive they might be. Moreover, if the price is the key factor explaining the low demand for charging services, as the Research Group 5 claims (see chapter 4), then what can the micro-entrepreneurs do? Indeed, Kianga's micro enterprise model is akin to a micro-franchise. The micro-entrepreneurs manage a point of sale from the house of one group member. They actually have very little entrepreneurial decisions to make: the business package they receive is very tightly wrapped. They do not set the price of the services they sell; they do not have any perspective of expanding the business beyond the limits of their village.

2.4.3. Risk-taking attitudes

Let us go back to the lab-in-the-field experiment. After the competitiveness experiments, the participants' attitude towards risk is tested, with a protocol that is quite classic in experimental economics. The participants must make a series of choices between earning a guaranteed reward, gradually increasing from 100 to 500, and entering a lottery, in which they have one

[157] The authors also find that the more educated the participants, the more likely they will choose to compete… We may wonder if what is measured is competitiveness or math skills.

chance out of three to earn 1000, and 2 chances out of 3 to earn zero. Risk-takers will continue to opt for the lottery even as the guaranteed reward increases, whereas risk-averse participants will switch to the guaranteed reward early on during the game.

But how does risk-loving translate into better business performance? The Research Group 5 first admits that the micro-entrepreneurs have few risky decisions left to their discretion[158]. The only risky decision that is left to the micro-entrepreneurs is the choice whether or not to buy activation units from Kianga Energy Ltd., and in which quantity. Risk-averse micro-entrepreneurs may be reluctant to purchase enough units at once, and may find themselves temporarily unable to serve customers, which might eventually hurt their business. The fact that micro-entrepreneurs must pre-pay a fee to Kianga, rather than pay a percentage on the proceeds of the sales afterwards, does indeed shift the business risk onto them. This is not uncommon in bottom of the pyramid markets.

> "A number of studies have detailed how celebrated BoP programmes such as Care International's Rural Sales Programme, Grameen 'Phone Ladies', and Avon in South Africa and Brazil transfers risk onto poor women by requiring them to buy equipment or goods up front on credit, leaving them to cope with increasingly saturated markets, falling returns […]" (Meagher, 2018)

Pay-as-you-go business models are often praised because they enable for-profit companies to serve a poor clientele while limiting the risk of default (Barrie and Cruickshank, 2017). This suggests that, for larger firms targeting poor customers, risk-aversion is regarded as a factor of success. Why doesn't this indulgence extend to micro-entrepreneurs, who are presumably more vulnerable in case of a financial loss? Why is this idea that the poor should be more willing to take risks so tenacious? The analysis of the corpus of documents produced by the Research Group 5 did not provide much insight to answer that question. But there might be a clue in a case study describing an RCT in which the researchers and the implementers had persistent disagreements about what the RCT should evaluate (Quentin and Guérin, 2013). This project evaluated the impact of a health micro-insurance scheme in Cambodia. The economists found that the people who chose to buy micro-insurance were on average risk-takers – whereas in standard economic theory, risk-takers are supposed to be less likely than risk-averse people to buy insurance. However, in Cambodia, micro-insurance is a new product, and people have no hindsight about the potential benefits of insurance: that is why it attracts mostly risk-taking people. The implementer had been aware of this tendency for years and did not consider it as a

[158] Source: final report addressed by the Research Group 5 to Womenergy.

remarkable finding at all. However, as it goes against the standard economic theory, the finding was regarded as ground-breaking by the randomistas. Similarly, the hypotheses formulated by the Research Group 5 are not tailored to the specific context of the villages of the experiment. Rather, they are expressed with respect to a corpus of literature in behavioral economics. The members of the Research Group 5 address their peers. This corpus is composed of articles overwhelmingly based on lab economic experiments implemented in developed countries, testing hypotheses from the standard theory. Geographer Hebe Verrest warns that current analyzes of micro-enterprises in the developing world are based on inadequate assumptions (2013). She suggests that the micro-entrepreneurs' vulnerability and ambition should be taken into account when trying to explain the limited growth of micro-enterprises: entrepreneurs might prefer to earn a modest but stable income to get by rather than venturing into lucrative but risky businesses.

2.4.4. Some non-behavioral explanations for business failure

Interestingly, while building a figure of a successful, competitive and risk-loving micro-entrepreneur corresponding to the standard theory of enterprises, the Research Group 5 listed some causes for micro-enterprise failure that have nothing to do with the micro-entrepreneurs' behavioral characteristics[159]. These alternative causes for failure were not emphasized at all: they appeared in the methodological section of a report, among some remarks on attrition. Attrition refers to the fact that over time, some individual may drop out from the sample. A few micro-enterprises ceased to operate between the baseline and the endline survey, and as a result, they were removed from the experimental sample, reducing its size and thus, the statistical power of the experiment. A first reason for micro-enterprise failure was resided in the experiment itself. Some micro-enterprises were randomly equipped with a charging device that was set-up to charge the lights' batteries half-way, for half the usual price[160]. The light-owners eventually discovered that the Kianga micro-enterprises of a neighboring village were selling full recharges, and preferred to walk over to the next village to buy full recharges. As a result, the micro-enterprises forced to sell half-recharges lost their clients and stopped their business. In another village, the light-owners figured out how to unlock their light from Kianga's

[159] Source: ibid.

[160] I barely mention that branch of the experiment in the dissertation because I have little data on it. But it is aimed at testing whether the consumers with high liquidity constraints prefer to recharge smaller amounts of energy more frequently, despite the inconvenience.

technical system. They started to charge their light in neighboring villages, connected to the grid, rather than at Kianga's micro-enterprise.

Ironically, another factor explaining the failure of micro-enterprises is… development. On its website, Kianga Energy Ltd. explains that it selects off-grid villages, which are unlikely to be ever electrified due to their extremely remote geographical situation. The country, however, has an ambitious electrification program that progresses slowly but steadily. In some of the villages included in the experiment, one could see tall and thick wooden poles, ready to be erected – soon, they would be supporting power lines, connecting villages to the grid, and rendering Kianga little LED lights obsolete.

*

RCTs are not geared at eliciting causal mechanisms. The Kianga Energy Research Project brings in another experimental methodology, the lab-in-the-field, in an attempt at explaining the outcomes measured with the RCT (the relative success of micro-enterprises according to the micro-entrepreneurs' gender). But the lab-in-the-field experiments, overly shaped by the literature in experimental economics, are not relevant with regards to the problems experienced by the micro-entrepreneurs. It makes little sense to explain the micro-enterprise's performances with competitiveness and risk-taking attitudes, when there is no competition and when micro-entrepreneurs have almost no decisions left to their discretion. There is a misalignment between the research and the intervention components of the experiment: the micro-entrepreneurs' role is defining a business strategy is extremely limited in Kianga's model, but the Research Group 5 uses theoretical models based on a stereotyped figure of the entrepreneur.

Section 3: Women empowerment through female entrepreneurship?

This section looks into the details of the epistemic and political operations accomplished by the economists around the notion of female economic empowerment. The first sub-section reflects on the place of women in poverty-reduction policies. The last two sub-sections discuss the experimental choices made by the Research Group 5 around the notion of female empowerment, as well as their measurement strategies.

3.1. The centrality of the figure of the third world woman in poverty-alleviation policy-making

3.1.1. Motherhood and maternalist policies

Women have long been the objects of targeted development policies, since the colonial times. Here is one early example, taken from the description of an uncanny medical utopia (Lachenal, 2017). During World War 2, The Haut-Nyong, a whole region of Cameroon – under the French colonial rule at the time, was governed by a medical doctor who had been granted full administrative authority to improve a catastrophic demography. Pregnant women were removed from their homes to spend the last month of their pregnancy and the first months of their baby's life in clinics. They received a daily ration of food, some soap, some child-rearing instruction, and they had nothing to do other than cook for themselves and keep their whereabouts clean. While expectant women were forcibly resting away from their families, foodstuffs and taxes were requisitioned in the villages where they came from to supply the colonial maternity clinics. Women were extirpated from their domestic environment, as part of a complete reorganization of the intra-familial labor and resources repartition. This may be interpreted as a way of protecting women from being exploited by their relatives, which would be detrimental to their pregnancy. If I may risk the anachronism, this may be regarded as an early, colonial and totalitarian instantiation of Millennium Development Goal 5: improve maternal health.

Leaping forward into the late 1990s and across the Atlantic Ocean, there is a very well-known case of development policy-making focusing on mothers. Nation-wide conditional cash transfers programs, such as Oportunidades (formerly Progresa) in Mexico and Bolsa Familia in Brazil, were developed in Latin America as policy instruments to increase school attendance rates and children's health. Poor families receive monthly or bi-monthly benefits, on the condition that children attend school, are well-nourished and are presented to medical visits on a regular basis[161]. Money is systematically transferred to the female family head, which is widely interpreted as contributing to women's economic empowerment, and in reinforcing their position and decision-making power within the family. On the other hand, mothers are the ones whose compliance with the program requirements is monitored through frequent workshops and meetings. In the case of Progresa/Oportunidades, recipient mothers are also asked to

[161] I use the present tense because these programs still exist.

participate in community works, such as cleaning schools or health centers. Based on the idea that beneficiaries must actively cooperate and remain accountable for their families' well-being, Oportunidades largely depends on the time and efforts invested by women. Such programs pertain to a "maternalist" vision of development, that reinforces traditional female domestic roles. Maternalism confirms motherhood as a woman's primary social role and puts female altruism at the service of the state, as an instrument to reach public policy goals (Molyneux, 2006). In the case of Latin American conditional cash transfers, women are entitled to economic empowerment primarily as mothers expected to raise children who will be better equipped (i.e. better educated and physically more able) to get out of poverty. This type of policies is based on the theory of human capital (Becker, 1964), and aims at incentivizing families to invest more resources towards their children's future.

3.1.2. Using women and girls to fix the world?

In an article entitled "Fixing women of fixing the world?", Sylvia Chant and Caroline Sweetman argue that gender mainstreaming in development (i.e., the systematic inclusion of a gender dimension in development programs) is not necessarily to be celebrated as a sign of feminist advancement (2012). Initiatives targeted at women often amount to heavily relying on women to "deliver development goals" (e.g. in the form of care or longer working hours[162]), for the benefit of others, be it to the detriment of their own well-being (Chant and Sweetman, 2012). The authors criticize the "smart economics" approach that "unashamedly" considers women as development instruments. This approach, which was for instance promoted by the World Bank in the 1990s, is not rights-based, but efficiency-based. It means that women are not regarded as unconditionally entitled to development and empowerment, but that they are deemed more able to deliver. It is thus "smarter" to invest in them. They are seen as more reliable (e.g., as microloans debtors), and more altruist in the spending of their earnings (typically, towards food purchases, health and education). This reinforcement of the burden of women is analyzed as a "technology of gender", meaning a set of practices aimed at turning gender into a productive asset (Roy, 2012b).

The idea that women tend to spend their earnings in more family-altruistic purchases than their male counterparts has long been established in the field of poverty-alleviation. More recently,

[162] Kianga Energy Ltd. insists that the position of micro-entrepreneurs requires very little effort. However, time that was previously used to rest (the early afternoon, when villagers come back from a long morning dedicated to farming work) is repurposed as shop-keeping time.

women living in poverty were more and more described not only as more responsible consumers, but also as potential talented economic agents to be empowered.

> "[T]he Third World woman has emerged as an "instrument" of development. If under conditions of colonialism and postcolonial modernization the Third World woman was constructed "under Western eyes" — as a victim to be liberated from her patriarchal culture—then today she is framed as a heroic entrepreneur and selfless altruist. The moral register of such a gender order is worth noting." (Roy, 2012b, p. 143)

Indeed, when browsing websites from NGOs, international organizations or companies involved in micro-entrepreneurship, one can notice that the photographs illustrating those websites often represent women. Anthropologists studying female micro-entrepreneurship give a mixed appraisal (Dolan, Johnstone-Louis and Scott, 2012). Aparajitas, which translates as "women who do not accept defeat", are enrolled in the large Bangladesh Rural Sales Program, coordinated by the NGO Care and targeted at very poor women. They go door-to-door to sell consumer goods, such as toiletries, prepared food, clothing, etc. The authors stress that Care's long-term involvement in the country and knowledge of the cultural context were key to the success of the program. Interviews with aparajitas reveal that their activity not only affords them economic autonomy, but also increases their self-esteem, their self-confidence and their weight in familial and social interactions. Despite these positive self-reported empowering effects on the lives of the female micro-entrepreneurs, the authors assert that micro-enterprise can be considered neither a sustainable income source, nor an ideal gender empowerment path. Indeed, it does not challenge the structural factors of women oppression. Allowing women to improve their material situation (e.g., to quote an example from Dolan et al. [2012] to own two saris to wear instead of just one, to buy food more light-heartedly) does not amount to achieving gender empowerment, as scholars have warned.

> "[T]he distinction between gender and poverty is important to assert in the face of the tendency in development organizations to collapse all forms of disadvantage into poverty" (Jackson, 1996, p. 501).

Development Scholars Aldea Cornwall an Althea-Maria Rivas deplore that in the context of international development, the meaning of women empowerment gradually shifted from the transformation of economic, social and political structures to

> "interventions that seek simply to provide women with improved access to resources, through micro-enterprise […] Empowerment is fundamentally about changing power relations. It is not just about improving women's capacities to cope with situations in which they experience oppression or injustice" (Cornwall and Rivas, 2015, p. 405).

3.1.3. The rise of female micro-enterprises as the result of degraded labor policies?

There are more radical criticisms of female micro-entrepreneurship as a development policy. For instance, scholars have noticed how its emergence coincides with an increasing unemployment rate in formal (and male) sectors of the economy:

> "Thus [the husband] was now free, like the proletariat of old, to join his wife in her more entrepreneurial project of selling food on the street. The only one to be developed here was the husband, who clung to the notion that he was better off in a salaried job with the state." (Elyachar, 2002, p. 496)

The rise of the promotion of female micro-entrepreneurship and more or less formal self-employment arrangements should also be interpreted in the context of labor policies in general (Chant and Sweetman, 2012 ; Prentice, 2017). In Trinidad and Tobago for instance, the gradual dereliction of the garment industry was reflected in the replacement of large industrial factories by smaller workshops, and of smaller workshops by home-based work. The change in scale was accompanied by degraded employment conditions: home-based female micro-entrepreneurs possess their own sewing machine at home and are paid by the bundle. Encouraging female labor in the form of home-based micro-enterprises stresses the workers' female, domestic status while denying them wage work, the "ungendered status of worker", and the type of social struggles associated with it.

> "With the convergence between industrial homeworking and micro-enterprise development, we see a re-ordering of history that places women and their labor within a development model concerned with 'livelihoods' rather than an industrial labor category." (Prentice, 2017, p. 17)

These works shed a contrasting light on the question of whether policies need to be gender-specific. Whereas some organizations (and scholars) insist on the importance of gender-sensitivity in policy-making, these authors show that focusing on gender can lead to pitfalls, such as restraining women within the confines of informal occupations, domestic space and survival. In the case of the Kianga Energy Research Project however, the off-grid villages where the experiment take place (and for that matter, the country at large) were never industrialized. Formal employment is nearly absent from the rural areas, and access to a micro-enterprise does represent one of the rare options aside from subsistence agriculture.

3.2. How to experiment on women's empowerment?

There is no definition of female empowerment in the documents written by the Research Group 5. However, the examples taken to illustrate it, and the variables used to measure it, shed light on the kind of female empowerment they champion. The various documents emphasize economic empowerment. First, women are to be considered not only as beneficiaries, users or consumers, but also as economic agents able to create value (producers, managers and entrepreneurs). Second, the fact that women earn an income enables them to have more autonomy in their purchases. They are expected to increase their expenditures for items that increase the well-being of the household, such as food, health and schooling[163]. The "other dimensions of empowerment", such as the improvement in women's social standing in their community and an increase in girls' aspirations, are consequences of economic empowerment. Another prominent figure of the RCT movement, Rachel Glennerster, co-authored a "practical guide to measuring women's and girls' empowerment in impact evaluations" (Glennerster, Walsh and Diaz-Martin, 2018). In this document, released a couple of years after the inception of the Kianga Energy research project, empowerment is defined broadly as the ability to make strategic life choices for oneself.

3.2.1. Fighting discriminations against women with gender quotas

The first step to follow the epistemic work of the economists of the Research Group 5 is to describe the branches of the experiment that are dedicated to women empowerment. In earlier versions of the Kianga Energy research project, the economists had planned to compare households receiving only one light to households receiving two lights. Their hypothesis was that if there is only one light per household, the adult male will likely monopolize it, whereas if there are two lights in the household, women and children will have a better access to it. This branch of the experiment was abandoned, probably for budget reasons[164]. Thus, the gender component of the experiment is mostly materialized in the imposition of quotas. The intervention is quite simple, it consists in imposing a gender quota on the population of micro-entrepreneurs. However, the gender quotas are problematized in at least three different ways, that are all to found in the Research Group 5's publications. First, the gender quotas are

[163] In an internal note that I found, there is the trace of a branch of the experiment that was eventually dropped: equipping female micro-entrepreneurs with lockboxes for them to keep their earning safe from the other household's members.

[164] All the lights distributed in the villages of the experimental sample are bought by the Research Group 5: doubling the number of lights in some villages would have affected the budget.

problematized as an intervention that has the potential to improve the situation of the women living in the villages partaking in the experiment, by granting them equal opportunity. Second, the gender quotas afford a comparison between male and female micro-entrepreneurs, to provide evidence that women are at least as capable of managing a micro-business as men. This claim is addressed to the various stakeholders similar to Kianga Energy Ltd., so as to reassure them with regard to including women in their distribution models. Third, the results of gender comparison are used in the academic debate among economists and management scholars about women's business performance.

During the pilot phase of the project, the Research Group 5 noticed that during the village meetings in which Kianga Energy Ltd. explained its micro-enterprise model, many women expressed interest in becoming a micro-entrepreneur. But they only rarely ended up being part of the micro-entrepreneurs' group. What happens between the first meeting when women are enthusiastic and motivated, and the second meeting, when the final candidates to micro-enterprise, chosen by the village leader, are almost all men? The researchers assume that cultural factors, such as patriarchal social organization, prevents women from being chosen[165].

The imposition of gender quotas is a classic policy instrument to fight discriminations and enhance equality of opportunities between women and men. In an article published jointly by the Research group 5 and other researchers from Womenergy's network, it is specified that the gender quota intervention is based on "liberal feminist theory". Let us note that this article is the only one where there is an explicit reference to a theoretical framework regarding gender theory. I think that this theoretical clarification, which stands out in comparison to the other academic productions by the Research Group 5, was suggested by their co-authors[166]. Liberal feminism asserts that gender differences are socially constructed: men and women should perform equally well, physically and intellectually, provided that they benefit from equal conditions and resources. In the paper, liberal feminism is contrasted with social feminism, which promotes equality between women and men but acknowledges the existence of gender differences, with Marxist feminism, which locates the roots of women's oppression in class society and economic exploitation, and with radical feminism, which denounces patriarchy and the systematic oppression of women for the benefit of men. Liberal feminist theory, compared to the other strands of feminism mentioned in the paper, requires lighter interventions. Social

[165] Source: Article published in 2020 by the Research Group 5 and other researchers from Womenergy's network.

[166] I met one of them at the meeting convened by Womenergy. Contrary to the economists of the Research Group 5, the scholars from the other research group describe themselves as gender experts.

feminism, for instance, which postulates differences between genders, might call for more training or mentoring for female entrepreneurs than for their male counterparts[167]. Marxist feminism would advocate for challenging the repartition of resources and means of production. Radical feminism would necessitate a profound transformation of the gendered social organization. But liberal feminism emphasizes the removal of the barriers to equal opportunity, which can be implemented in a piecemeal way and at no cost – that last point being underlined by the Research Group 5.

The quotas were implemented in a strictly random way, meaning that the objective was not only to increase the proportion of women involved in Kianga micro-enterprises, but also to do it in a way that allows comparisons between women and men. In one third of the villages, the micro-entrepreneurs' groups had to include four women, in another third, the groups had to be mixed (two women and two men) and finally the last third of the villages had to include four men. As a result, if village leaders fully cooperate and comply with the random assignment they received, 50% of the micro-entrepreneurs are women. This is an important increase in comparison with the very low proportion of women in Kianga's micro-enterprises, outside of the experiment. According to the Research Group 5, the implementation of gender quotas went smoothly in the villages[168]. The researchers also mention that voluntarist policies have been carried out in the country in favor of gender equality, increasing gender awareness among the population. It is likely that the researchers anticipated non-compliance from villages assigned to an all-female micro-entrepreneurs' group: their hypothesis was that villagers are generally reluctant to let women accede to important positions. But did they expect that that non-compliance could happen in the opposite case?

The first day that I spent on the field with EvaP's team of fieldworkers, in one of the villages, four women were waiting for the fieldworkers. They had volunteered to manage a Kianga micro-enterprise, and secured enough money to pay the commitment fee. But the village had been assigned to an all-male micro-entrepreneurs' group in the protocol. Marek, the field manager, spoke to the women, politely asked them to step aside and let their husbands be the micro-entrepreneurs. The women protested and explained that they brought their own money

[167] This is for example the suggestion of Womenergy's principal investigator (the researcher tasked with overseeing all the projects and writing the final synthesis of the findings of all the research groups) on an unpublished document written by the Research Group 5 and entitled "gender approach". The document indicates that female micro-entrepreneurs, as their male counterparts, will get "basic training" from Kianga Energy Ltd. Womenergy's principal investigator comments: "women generally need more support".

[168] Source: final report addressed by the Research Group 5 to Womenergy.

to pay the commitment fee, that it was not their husbands' money but theirs. Marek tried to convince them to give the commitment fee money to their husbands, to "help them", as he later translated for me. The women finally accepted to step aside. Marek probably chose the most efficient solution, with regard to keeping up with the pace of the survey campaign – he was under pressure to complete the baseline survey within the timeframe set by the principal investigators. He was not following instructions but improvising, and trying to fix the mistake his team had made – the mobilizers should have checked whether the micro-entrepreneurs' group was compliant with the random gender assignment. Rather than asking the village leader to form a new team of four men, which would take several days, he formed this new team himself, with the men that were easily accessible (through their wives) and who could secure the commitment fee very easily, by asking their wives.

In this specific village, not only four women were asked to give up an opportunity because of their gender, but they were also dispossessed of their own money, for the benefit of their husbands. This is a local instantiation of the exact opposite to what the Kianga Energy Research project is trying to accomplish. This can be explained by the hiatus that exists between the researchers' frame of reference and the villagers' frame of reference. The population relevant to the Research Group 5 is the treatment group, and 50% of the treatment group is female, which is extremely satisfying to the researchers. But the four women who were told to give up an opportunity do not know that they are part of a treatment group: what they know is that in their village, 100% of the micro-entrepreneurs are men.

Womenergy's team expressed in several documents the importance of gender-sensitivity in the research processes implemented by the different research groups[169]. A webinar entitled "gender approach" was organized early on in the project and each research group had to submit a document describing their gender approach. In this document, it is written that at least half of EvaP's fieldworkers are women, and that women respondents would be interviewed alone, with no other family member (especially, without the husband) in the room. These two elements are not specific to the Kianga Energy Research Project, they are standard practices. EvaP hires mixed teams of fieldworkers for any RCT, and they always recommend to interview the respondents (male or female for that matter) alone, to ensure that they respond more freely and thus more honestly. So, the Research Group 5 did not plan anything to ensure the "gender-sensitivity" of fieldwork beyond EvaP's standard practice. As explained in the beginning of the

[169] Source: A document written by a member of Womenergy's team of experts, to the different research groups funded by Womenergy under the same program.

previous chapter, fieldwork and data collection are not necessarily questioned by the researchers using RCTs, who are interested in the data, and not in the process of collecting them. I doubt that the researchers ever heard of the incident of the four women who were turned down. But I imagine that the members of the Research Group 5, as most scholars using RCTs, would have answered that the goal of the experiment is to produce evidence in support of women entrepreneurship, and that denying a few women an opportunity is the unavoidable cost of experimenting. Indeed, the four women managed to self-select as micro-entrepreneurs against the odds, which might be the sign that they have specific qualities that distinguish them from average women. Including them in the sample might introduce a bias in the experiment.

3.2.2. A costless policy: reassuring service-providers about women's abilities

Even if the Research Group 5 never refers to the concept of "smart economics" analyzed by Chant and Sweetman (2012), they constantly discuss the cost, efficiency and economic feasibility of including more women in Kianga's micro-enterprises. Part of their argument consists in explaining that a gender quota does not incur any extra cost for the organizations implementing it. On the contrary, the Research Group 5 aims at proving that this anti-discrimination intervention can be "revenue-neutral", provided that women perform at least as well as men as business managers. They assume that the quota should help overcoming the "cultural, traditional and psychological" barriers that prevent women from starting a micro-enterprise. They however acknowledge that one barrier may persist despite the voluntarist commitment to include women: exactly like their male counterparts, women are expected to pay a commitment fee. But they might have a lesser access to credit (formal or informal), and thus might have more difficulty to secure the amount corresponding to the commitment fee[170]. The Research Group 5 suggests that it might be necessary to lower the commitment fee, which, in the short term, increases the cost of including women. They add that this cost should however be recouped in the longer-run, through the pay-as-you-go scheme. Let us note that the commitment fee was indeed lowered over the course of the experiment, from 40.000 to 12.000, but for all groups, regardless of gender.

In the 2020 paper written jointly with researchers from another research group affiliated to Womenergy, the Research Group 5 analyzes Kianga Energy Ltd.'s administrative data. This data is collected on about a thousand Kianga micro-enterprises that are not included in the

[170] Source: note entitled "gendered approach" and addressed to Womenergy.

sample of the RCT. In these villages, micro-entrepreneurs do not necessarily work in groups of four, and there is no gender quota enforced. The groups might include as many as 10 members and sometimes the micro-entrepreneur runs a business solo. The other difference is that outside of the experiment run by the Research Group 5, the micro-entrepreneurs have to sell the LED lights to their fellow villagers before they can start selling battery recharges[171]. It appears, when comparing the sales data, that women-led micro-enterprise significantly outperform male-led micro-enterprises on average. The economists, loyal to the methodology of RCTs, warn that the study is based on observational data, and not on experimental data[172]: women are vastly underrepresented in the sample. Therefore, they write, there might be a selection bias in their results: the women who become micro-entrepreneurs are not average women, but outstanding women who were able to overcome the traditional barriers that usually prevent women to seize business opportunities. These women might have particular qualities (talent, pugnacity, authority, etc.) that might explain their good performances. Despite this caveat, the paper concludes that women are excellent sales agents for solar energy products, due to their communication abilities and availability. Therefore, the paper concludes, it makes perfect business sense to increase the proportion of women among the micro-entrepreneurs. The Research Group 5 clearly develops an efficiency-based approach to gender mainstreaming: reducing discriminations against women is analyzed as a feasible and profitable policy. The Research Group 5 indicates in its final report to have convinced Kianga Energy Ltd. to integrate a gender quota in its standard business model – indeed, Kianga's website now mentions that they aim at including 50% of women among micro-entrepreneurs.

3.2.3. Fighting the female underperformance hypothesis

The gender quota intervention randomly and evenly divides the experimental sample into two comparable subsamples: female and male micro-entrepreneurs. In the previous section, I explained how recharge sales data are automatically and instantaneously collected through the GSM network, each micro-enterprise's battery being equipped with a SIM card. Men's performance and women's performances are compared to each other. The analysis of this data shows no significant difference between the volume of sales in female-led micro-businesses

[171] As a reminder, in the villages of the experiment, this step is subsidized by the Research Groups 5: they distribute 100 free LED lights per village to artificially create a clientele for the micro-enterprises.

[172] Except this one paper, co-authored with researchers that are not part of the Research Group 5, all the other articles written by the Research group 5 draw on the RCT. This paper is an exception. As explained in the first section of this chapter, Womenergy requires that the different research groups collaborate on joint publications. The collaboration explains that this paper stands out from the rest of the corpus.

and in men-led micro-businesses[173]. To explain this absence of a gender gap, the researchers mostly resort to behavioral explanations. Let us go back to the lab-in-the-field experiments described in the previous section. The researchers estimate the competitiveness and risk-aversion of the micro-entrepreneurs. They find no significant difference between men and women, which is often phrased as "women do not shy away from competition"[174]. The reasoning can be summarized as follows: (A) women are not outperformed by men in business results; (B) women are on average as competitive and as risk-loving as men. Thus, (C) women have the behavioral qualities to succeed in business. The bridge between proposition (A) and proposition (B) is not based on empirical evidence but comes from the standard economic theory of enterprises, which claims that competitiveness and risk-taking are necessary for an entrepreneur to be successful.

As explained in the previous section, the Research Group 5 does not question the importance of competitiveness and risk-loving for the success of the micro-enterprises. However, what they do challenge is the assumption, common in the literature in behavioral economics, that women are less competitive than men. While being as competitive and risk-taking as men, according to the Research Group 5's findings, women also have some specific qualities. Semi-structured interviews conducted with a small subsample of micro-entrepreneurs suggest that women are likely to be home more often and more consistently than men, and thus, they are more reliable as shop-keepers[175]. In the end, it is unclear whether women's performance can be explained by their similarity to men, or by their specifically female gendered characteristic, such as being stuck at home, due to domestic chores and care duties. When these contradictory insights are juxtaposed, artificially, as a result of my analysis of a corpus including different documents, the epistemic work of the economists on gender seems fuzzy. Maybe it is – is it yet another instantiation of the theoretical agnosticism claimed by the randomistas? However, the normative and political work the Research Group 5 is trying to accomplish is clear. They claim that women should not be denied business opportunities. In the documents intended for their peers (e.g., the community of behavioral economists), they use behavioral arguments. When they write a document intended for Womenergy, they rely on more qualitative evidence. But they convey a consistent political message.

[173] Source: ibid.

[174] Source: lab-in-the-field experiment paper.

[175] Source: final report addressed by the Research Group 5 to Womenergy.

3.3. How to measure women's empowerment?

3.3.1. Economic empowerment

Finally, how do the researchers measure women empowerment? The most obvious outcomes pertain to economic empowerment. The fact that women-led micro-enterprises perform as well as men-led micro-enterprises on average means that women derive on average as much income as men. But, according to the hypotheses of the Research Group 5, women should spend it in a more "pro-social" or "family-altruistic" way[176]. The researchers insist on three types of expenditures that should be higher: health, schooling, and food[177]. Quite surprisingly, there is no sex-disaggregated result about food consumption in micro-entrepreneurs' households in the available documents – whereas there are sex-disaggregated results for other variables. The final report features a graph illustrating a statistically significant result: there is a large increase in weekly food consumption in the treatment group at large. The insight that women spend a larger share of their micro-entrepreneur's income to buy food than their male counterparts is supported by the semi-structured interview campaign: 80% of women declare spending their income towards food purchase, whereas men declare spending their earning in leisure purchases (e.g. alcohol and tobacco), informal saving groups or buying cattle.

This surprising use of the data is an opportunity to discuss data collection. There are many clues in the Research Group 5's writing that indicate clearly that they consider experimental results to be more rigorous and valuable than non-experimental results. Yet, in this occurrence, they refrain from using data from their large experimental sample, and use non-experimental data instead, from a semi-directive interview campaign conducted on 30 villagers[178]. The most likely explanation for this is that the difference in weekly food purchases between male and female micro-entrepreneurs was not statistically significant. If that is the case, then what shall we conclude? Do respondents answer more accurately and truthfully when interviewed with a directive or a semi-directive questionnaire? During the qualitative survey, they are asked how they spend their income, whereas during the baseline survey, they are asked the exact amounts

[176] Source: final report addressed by the Research Group 5 to Womenergy.

[177] This corresponds to the expectations of Progresa/Oportunidades and Bolsa Familia programs, analyzed in Molyneux (2006), and more generally to the investments in human capital that are often the object of development policies.

[178] Upon the insistence of Womenergy, the Research Group 5 included a qualitative dimension to the experiment. A research associate working at EvaP conducted several dozens of semi-structured interviews with villagers, and observed micro-entrepreneurs at work. The results from this qualitative survey are briefly exposed in the Research group 5's final report.

spent on each item. There are at least two ways of interpreting the difference between the results obtained with different types of questions. On the one hand, the semi-directive questionnaire makes more room for what is valued by the respondent. We could imagine that the respondents will report the purchases that make them the proudest. Women insist on home-making whereas men insist on purchases that increase their personal social status and their opportunities to socialize with other men. Their answers might reflect what matters to them rather than what they actually spend. On the other hand, the directive questionnaire used during the baseline survey requires exact amounts and might provoke more misremembrances, omission and dissimulation than an open question. My empirical material yields no answer to this methodological puzzle, but it sheds light on the importance of being attentive to measurement issues when following the economists work.

In any case, female micro-entrepreneurs, as their male counterparts, derive an income from their new activity[179]. Does this extra-income afford women more autonomy and a greater negotiation power within the household? In the publications that are available at the time of writing, there is no answer to that question. However, the survey questionnaire indicates that the researchers plan on investigating the question. A short section of the questionnaire is entitled "household decision making". The questions aim at understanding how various decisions (such as where to live; whether or not send the children to school; purchasing day-to-day items, etc.) are made: who in the household makes which decision, and who is consulted. Economic empowerment, however, seems to benefit women in specific ways. The most striking finding of the semi-structured interview campaign is that women report a positive change in their social status, whereas men do not mention any improvement of their social status when describing the benefits of partaking in a micro-enterprise. Women say that they have more occasions to meet other villagers. As a result, they feel more trusted and respected – one of them said that she felt that she could even run for village leader.

3.3.2. Empowering mothers?

The researchers collected a lot of data related to the household's children. This data is collected through interviewing the respondent about the household's children, and through directly interviewing one of the household's children. Micro-entrepreneurs are asked about their

[179] In the previous section, I exposed elements showing that Kianga micro-enterprises are unlikely to be sustainable sources of income, and that micro-entrepreneurs are likely to remain in a leasing situation rather than becoming full-fledged owners of the equipment. However, in the short-run, micro-entrepreneurs do earn some revenue, according to the Research Group 5's results.

expectations and aspirations for themselves and for their children. In a short module of the questionnaire, they are asked to imagine what each child in the household will be doing in three years' time, and at the age of 30. They are asked how likely it is that each child will be studying, working full-time, be unemployed, be married, etc.; and which occupation the child may hold at the age of 30. One of the results presented in the final report is that women belonging to female-only micro-enterprises are more likely to expect their children to study in three years' time than their control group counterparts. The description only mentions women, whereas the graphic illustration shows that that male micro-entrepreneurs are also more likely than their control groups counterparts to expect that their children will study three more years. The other results pertaining to the expectations of the household's head for their children are described as "mixed" in the report, meaning that no significant impact was established. There might be many explanations for these mixed results, and one of them is that the questions made little sense in in the context of rural, off-grid villages. The use of categories such as full-time employment and unemployment in a place where most people practice subsistence farming seems a little far-fetched. Another short section of the baseline survey questionnaire is dedicated to the children's education: how frequently do they attend school, how much time do they dedicate to their homework, and which light source do they use when studying? A flagship result of the experiment is that the children of female micro-entrepreneurs increase their study time significantly more than children of male micro-entrepreneurs, by 50 minutes a week on average.

Finally, a shorter questionnaire is addressed to one of the household's children, aged between 11 and 18, preferably a girl. The children are to be interviewed alone. They are first asked a few questions about their current situation. They answer the same questions concerning time-use as adults, and some questions about their psychological well-being, such as "How much control do you think that you have over what happens in your life?" or "Using a scale of 1 to 10 where 1 means "not happy" and 10 means "very happy", overall, how happy did you feel yesterday?". But the bulk of the questions asked to the children are turned towards the future: the longest part of the questionnaire is entitled "aspirations". Several questions concern their educational aspirations: how far they want to study and how far they think they will be able to study, which type of diploma they want to obtain, etc. A couple of questions involve a comparison between the children and their peers, such as: "do you feel you get as much time to

study as most of the girls your age?". These questions invite the children to assess their situation relatively to the situation of others[180].

Then, many questions are aimed at collecting the child's professional aspirations. Most of them sound completely out-of-place[181]. Let us consider, for instance, the following question: "what do you expect to be your typical take-home monthly wage for when you have finished studying and have a full-time job?". The concept of monthly wage seems quite removed from the children's environment, in which formal employment is extremely rare. A typo in the questionnaire suggests that these questions were indeed written for a different place: there is a mistake on the currency. Instead of mentioning the national currency of the country in which the experiment is taking place, the questions about future wages indicate the currency of another African country with an economy that is much more developed, formal and prosperous. This is yet another indication that the questionnaire was written from afar, to answer questions that may be relevant to the researchers but that lack adherence with the field.

The last part of the questionnaire addressed to children focuses on "gender attitudes". Children are asked to express agreement or disagreement with a series of statements about gender, such as "a woman should tolerate violence to keep her household together" or "it would be good to elect a woman to be the village leader". The normative charge of the statements is pretty obvious for a Western reader. This last section aims at testing whether children whose mother become micro-entrepreneurs modify their ideas about gender, in a way that is more favorable to women. This hinges upon the idea that women can become inspiring role models able to modify the way people think about women.

The economists' vision of female empowerment is based on the individual transformation of a small elite – it seems very natural when reading the work of the Research Group 5, however one could have imagined alternatives, such as a cooperative including all the women in the village[182]. Women earn extra-income, and as a result, enjoy an improvement of their social status. The transformation of women is expected to leverage positive spillovers on the community at large, and mainly on their children. Improvements are expected inside the household, through consumption patterns that are more favorable to the development of

[180] I wonder which type of perceptions and affects this type of questions stimulates. Does it invite children to being more attentive to the situation of others? To be more competitive?

[181] In chapter 2 I provide descriptions of interactions between a fieldworker and some children he interviews.

[182] I encountered a few women's cooperatives in some villages during my fieldwork (mostly craftsmanship and farming).

children, and also through setting an example. Female micro-entrepreneurs are expected to act as role models in their home and in the community. This is subsumed under the notion of empowerment.

Empowerment is often flagged as an ambiguous notion, which has been rapidly appropriated by very different actors, with varied, and sometimes contradictory perspectives (Rowlands, 1995). Political scientist Fabrizio Cantelli distinguishes between "civic empowerment", which consists in collectively increasing a social group's power through the denunciation of injustices and inequalities – he uses the example of the civil rights movement in the US – and "managerial empowerment" (Cantelli, 2013). The managerial version of empowerment, according to Cantelli, applies to the poor, who are encouraged and incentivized to become active and responsible of their own livelihood, so as to turn the poor themselves into the main agents of poverty alleviation, in quantifiable ways. The Research Group 5 clearly subscribes to the managerial version of women empowerment.

Conclusion

This chapter was dedicated to reflect on the various articulations of the epistemic and political dimensions of the work accomplished by the economists when they conduct RCTs. The first section discussed the vision of the most prominent figures of the RCT movement on the matter. Ambiguous, they assert to be rid of partisan or ideological biases and in the same time, they assume a form of normativity based on micro-economic grounds. They also claim a special privilege to advise decision-makers; they regard evidence-based policy as more and more closely entangling experiment evidence production and policy design. The particular situation of the Research Group 5, whose principal investigators are at odds with Womenergy, their sponsor, sheds light on another version of evidence-based policy, which RCTs are ill-equipped to promote. Womenergy is an unusual sponsor, which does not seek to efficiently spend money but to efficiently weigh on international initiatives and resolutions. They are demanding a high level of reflexivity and a capacity to continuously produce relevant insight, not only at the end of the experiment. However, while the principal investigators of the Research Group 5 claim to their sponsor that they cannot say anything before the end of the experiment, they produce a lot of political statements, entwined in the epistemic statements, all along the duration of the Kianga Energy Research Project. The chapter attempted at recounting the formulation of such

statements in detail, focusing on the female entrepreneurship component of the experiment. The analysis reveals one important point: despite their commitment to produce empirical, operational knowledge, the Research Group 5 fails to construct an object of research that is in the same time a relevant object of intervention. Research questions that can be regarded as relevant or even ground-breaking in the literature in economics fall flat when turned into experimental objects implemented in the villages.

Finally, I would like to come back to my contention that RCTs produce a micropolitics of poverty. In this chapter, I describe the analytical **disentanglement** achieved by the Research Group 5 and discuss its effects. The Research Group 5 needs to formulate simple, straightforward research questions, allowing for the construction of experimental objects. I show that this step is particularly delicate: the political and empirical relevance of the questions may be lost in the process. This chapter also illustrates the idea of spatial **fragmentation**: female empowerment is described as a process taking place at the level of a village (with the gender quotas constraining the village leaders to appoint women as micro-entrepreneurs) and at the household-level (with the reinforced economic autonomy of women with regards to their spouse). Furthermore, the insistence of the Research Group 5 on the fact that the implementation of gender quotas does not affect the revenue earned by Kianga Energy Ltd. indicates a **containment** of the action within the villages. The achievement of female empowerment, in its minimal version, does not require a particular effort from anyone outside of the villages.

> My father would tell how once, long ago—centuries? years?—the lottery in Babylon was a game played by commoners. He would tell (though whether this is true or not, I cannot say) how barbers would take a man's copper coins and give back rectangles made of bone or parchment and adorned with symbols. Then, in broad daylight, a drawing would be held; those smiled upon by fate would, with no further corroboration by chance, win coins minted of silver. The procedure, as you can see, was rudimentary. Naturally, those so-called "lotteries" were a failure. They had no moral force whatsoever; they appealed not to all a man's faculties, but only to his hopefulness. Public indifference soon meant that the merchants who had founded these venal lotteries began to lose money. Someone tried something new: including among the list of lucky numbers a few unlucky draws. This innovation meant that those who bought those numbered rectangles now had a twofold chance: they might win a sum of money or they might be required to pay a fine—sometimes a considerable one. As one might expect, that small risk (for every thirty "good" numbers there was one ill-omened one) piqued the public's interest.
>
> "The lottery in Babylon", in *Collected Fictions*, Jorge Luis Borges, 1995

Chapter 4: Crafting {price}-worlds. Turning prices into experimental objects

Introduction: "crucially important" prices

All the companies distributing solar energy products to a so-called "bottom of the pyramid"[183] clientele in Africa sell solar lights with a small solar panel included, sometimes even built in the light[184]. Kianga Energy Ltd., unlike its competitors, sells solar lights without providing any solar panel to individual customers. The recharging equipment (a portative battery, a solar panel

[183] This term was coined by the now famous Indian businessman and strategy scholar C.K. Prahalad. It refers to the poorest share of the world population, that represents a huge untapped market according to Prahalad, who suggests that multinational enterprises should develop goods and services especially for this population. Prahalad's claim is further discussed in the next chapter.

[184] Gillian Davies provides a comprehensive description of the market for solar devices in sub-Saharan Africa (Davies, 2018).

and a pedal dynamo) is delivered to a group of four villagers, in exchange for a commitment fee. These four villagers, promptly made into micro-entrepreneurs, are tasked to operate a Kianga charging station and to sell battery recharges to the local Kianga solar light (and/or cellphone) owners. The only thing that makes the lights distributed by Kianga "solar" is their non-standard (and thus exclusive) connection to the Kianga solar charging system leased to the micro-entrepreneurs. The choice to decouple the solar light from the technical means to recharge its battery is a sociotechnical feature, in the sense that it can be regarded as the technical embodiment of projections and expectations formulated by the designers on the users and their environment (Akrich, 1989). The system designed by Kianga incorporates a particular conception of an off-grid village and, at the same time, drafts possible relationships between the villagers. The users are described through Kianga's economic model as willing to repeatedly engage in small transactions, but unable to save-up to purchase a more expensive solar light, equipped with its own solar panel, once and for all[185]. The villages are also described as compact enough for the users to be willing to walk to the microbusiness on a regular basis to buy a recharge.

Altogether, Kianga's economic model proposes an intensification of the commercial relationships between the villagers, by turning a few of them into retailers and the others into their regular clients. That particular socio-technical "script" (Akrich, 1992), meaning the set of roles and possibilities of action suggested by the device, can be regarded as the material expression of a business model geared at ultra-poor consumers. Selling the solar light and the recharges separately is presented as a way to match the users' energy spending patterns (small incremental purchases) and as a means to lower the barrier represented by the upfront cost of purchasing the solar light[186]. The expected sustained stream of revenue generated by the sale of recharges is supposed to compensate for the initial low price of the solar lights. Both prices determine each other in a feed-back loop: the more households buy a solar light, the bigger is the village micro-enterprise's potential clientele. But conversely, the more often the villagers are expected to recharge their solar light's battery on the long run, the lower can be the price of a solar light[187]. So, the price of a solar light must be low enough to broaden the micro-business

[185] On its website, under the frequently asked questions tab, Kianga Energy Ltd. self-describes as differing from its competitors in targeting people living with less than $1.50 a day, who are unwilling or unable to purchase even the most basic stand-alone solar lights available on the market.

[186] These arguments can be found in several documents written by the Research Group 5. They are fully developed in a scientific article published by three of its researchers, who produce a theoretical model of poor consumer behavior, based on Kianga Energy Ltd.'s case.

[187] This is explained on the page describing the research project, on Evidence against Poverty's website.

clientele, and the recharge rate must be such as to ensure a regular and constant stream of revenue in the long-run. Given the extreme cash constraint and price sensitivity of the targeted users, it is "crucially important", as the Research Group 5 stresses in the report[188] sent to its main funder at the onset of the project, to carefully determine the prices of the solar light and the recharge rate, two key parameters in the business model.

This chapter recounts the search for prices carried out by the Kianga Energy Research Project consortium. This search, as for the other questions investigated by the Research Group 5, takes the form of RCTs. The "voucher experiment" randomly tests different purchasing prices for a solar light, while the "coupon card experiment" randomly tests different recharge rates[189]. In both cases, eight different prices are simultaneously circulated within villages, in the material form of a paper voucher or of a coupon card. These prices are randomly assigned to different households. Finally, each household is faced with the choice whether to proceed to the purchase or not, at the price it was randomly assigned. The two pricing experiments do not overlap: they take place in distinct villages. However, they form a diptych, often referred to as the "business model testing" component of the project by the Research Group 5. This business model testing adds a layer of complexity to the whole research project. Why do prices matter to the point of running such complex experiments? Why isn't pricing left at Kianga Energy Ltd.'s discretion?[190] To measure the importance of this price-crafting operation, and get a sense of why the research consortium invests so much time, money[191] and energy in running pricing experiments – and, incidentally, why the author of this dissertation dedicates a full chapter to them – one must acknowledge that pricing is not a pure marketing endeavor. Rather, it is a full-fledged component of the intervention, invested with its own efficacy, which infuses the whole project with a distinctive flavor.

[188] The "scoping report" is a deliverable required by the Research Group 5's main funder, the NGO Womenergy, from all the research teams funded as part of its five-year Energy for Women Research Program. It is due shortly after the beginning of the project, to be published on Womenergy's website. The document has a constrained format and obeys strict guidelines. It can be described as an elaborated version of the research proposal.

[189] I use quotation marks because these terms are the ones used by the Research Group 5 and by the field teams to refer to these two experiments. In the remainder of the chapter, I do not use quotation marks.

[190] Outside of the experiment, of course, Kianga Energy Ltd. sets the prices of the solar lights and of the recharges independently from the researchers. However, as it will be explained later on, Kianga's CEO has actively sought help and guidance from researchers for pricing its products, and more generally for refining its business model.

[191] Although I do not know the exact share of the budget dedicated to the pricing experiments, several elements suggest that they were particularly expensive. About 15 extra fieldworkers had to be hired to implement them. Moreover, all the lights distributed to the villagers at a discounted or null price as part of the pricing experiments were bought from Kianga Energy Ltd. by the Research Group 5.

Pricing contributes to define the nature of the anti-poverty intervention at stake. This proposition draws on the insight that the features of a technical device must be understood as a set of responses to the assumptions made by its designers on the users and the environment for which the technical device is intended (Akrich, 1987). Technical devices contain a "script" that de-scribes the world, as it is projected by their designers. Thus, the description of a technical device contains and exhausts the description of its environment. I argue that a similar analysis can be conducted, with price crafting as a starting point. Prices, and more generally economic models, as well as technical objects, can be read as "scripts." Indeed, their characteristics are defined in response to assumptions about the environment for which technical objects (or prices, or business models are elaborated). This descriptive and prospective work embedded in the conception process is all the more salient as the technical object (or economic model) is elaborated for an unfamiliar environment. Economic entities are as good a starting point as technical objects; this slight shift of angle may be all the more fruitful as the question of the cost of poverty-reduction interventions has gained much traction since the early 2000s. The choice of focusing on the price of the technical devices rather than on the technical devices themselves is not only driven by the specificity of the case, but is also an attempt at capturing a more general trend: international development has gradually become the businessmen's and economists' affair – at least as much as the engineers' affair.

The present chapter describes how prices are turned into experimental objects. It describes and discusses the nature of the price that is constructed throughout the experiments. I hope to contribute something to Science and Technology Studies and economic sociology, which have not, to my knowledge, discussed experimental prices thus far. What is an experimental price? What are its characteristics? How is it crafted throughout these experiments? What does it take to implement a field experiment on prices that meets the standards of the RCT methodology? The experimenters have at heart to produce rigorous evidence to guide policy-making. But what does it require, in terms of material implementation and human interactions – the two being completely entangled? In which affects does experimental rigor translate? And finally, which effects do these experimental prices produce when they are circulated in the villages? – I shall insist that I am not researching the effects of the experiments *on* the villagers[192]. Rather, I propose an alternative description of the experiments, by regarding them not only as knowledge

[192] For the practical, epistemological and ethical reasons exposed in the introduction of this dissertation, I did not seek to interview the villagers at all. My research focuses on the poverty-reduction interventions, not on how the recipients respond to it.

production devices, but also as devices that organize material action *in situ*. Analyzing how material action unfolds, I attempt at qualifying the emergent proposition that is made to the villagers by the Kianga Energy Research Project consortium with these experimental prices.

The problem that surfaces in this chapter (and that is further investigated in the next one) can be synthetized as follows. How do prices shape poverty-reduction interventions? What role do prices play in defining anti-poverty policy, and thus, in problematizing poverty itself? Although the demonstration made in this chapter is very different from the demonstration made in the next one, both chapters can be read as a diptych. Each one of them illustrates a different aspect of the same idea. I argue – and this claim will be gradually substantiated in this chapter and the next one – that prices can act as world-making agents.

I propose to describe the process of crafting a price in terms of making {price}-worlds. Here, by "world", I refer to an assemblage of relationships, material flows and political narratives. I term "{price}-worlds" heterogenous assemblages that are built around prices and governed by prices, through three main channels.

(1) Prices populate {price}-worlds with certain humans and things, by inviting them in or excluding them.
(2) Prices contribute to shape the way people engage with things and interact with each other. Consequently, prices shape affects and practices and stimulate specific behaviors.
(3) Prices produce and maintain political narratives that can be shared by heterogenous actors.

{Price}-worlds are heterogenous assemblages of affective, discursive and material elements that hold together by virtue of a price. {Price}-worlds are worlds whose coherence, sturdiness and sustainability depend on the elaboration of an adequate price.

In this chapter, I explain how experimental prices create {experimental price}-worlds. I exhibit the characteristics of these {experimental price}-worlds. Namely, {experimental price}-worlds are discrete worlds, counterfactual to each other, which configure the act of paying in a particular way. Paying is not configured as an act enabling the payer to participate in market transactions, but as a way to get access to a certain form of citizenship and improved (more modern/ more comfortable) life. In the next chapter, I will show that the increasing resort to market-based poverty-reduction interventions and the consequent effort to craft low prices for the poor create {low price}-worlds. What I call {low price}-worlds are worlds in which responses to poverty take the form of the commercial distribution of small, cheap, humanitarian devices (Collier et al., 2017) distributed to individuals and families in order to provide them with access to basic goods and services.

Empirically, this chapter is based on different types of sources. I base my account of the pricing experiments on a corpus of ethnographic notes. I used participant observation, accompanying the fieldworkers in the villages and observing their work and their interactions with the villagers, occasionally helping with small tasks. I observed the pricing experiments' preparation and implementation, in constant conversation with the fieldworkers. I consigned what they did, the comments they made on the experiments, as well as the doubts and difficulties that arose along the way. I also rely on a corpus of documents written by the Research Group 5 and by the local managers of the project, in charge of supervising the material implementation of the experiments. Some of these documents are intended for internal use only (protocols, memos, etc.), while others are meant for publication: reports written for the main funding organization, short papers aimed at presenting the experiment on the internet for the general public, policy briefs and scientific articles intended for peers (economists), etc. In both cases, for anonymity purposes, I resort to paraphrase rather than direct citation of the sources. Finally, there are some sources that are not directly related to the Kianga Energy Research Project, but nevertheless indispensable to understand it. Scientific articles and handbooks that are used as references by economic field experiments practitioners are sometimes useful to shed light on the experimental design followed by the Research Group 5, and to contrast their work to similar experiments documented in the literature.

Immediately after this introduction, I succinctly review the sociology of prices. Then, the **first section** discusses the type of prices that the Research Group 5 is trying to elicit experimentally. The **second section** describes and analyzes the artefacts produced as part of the experiment to materialize the experimental prices. The **third section** shows that the experimental prices have a strong agency: they constrain the villagers and the fieldworkers within {price}-worlds and influence their choices.

A brief detour via the sociology of prices

The next couple of pages briefly summarizes, in a non-exhaustive way, the different analytical paths explored in economic sociology to address the question of where prices come from. I show that the literature mostly deals with two kinds of prices: prices forming on a market, and prices engineered by regulatory instances. I explain the specificity of the experimental prices analyzed in this chapter with respect to the market prices and regulatory prices discussed in the

literature. I argue in particular that the entanglement of experimental prices and politics takes micropolitical forms.

Prices are mysterious entities. Their mysterious character may surface acutely when prices strike consumers as being disproportionate, absurd, disconnected from the perceived value of some commodities relatively to others (Boltanski and Esquerre, 2016). By limiting the mystery of prices to cases when there is a breach in the "relative pricing structure", sociologists Luc Boltanski and Arnaud Esquerre problematize the "enigmatic reality of prices" as a possible basis for popular indignation and political criticism. However, this framing presents an analytical limit, by obscuring the enigmatic character of prices when they are routinely accepted as fair. In a way, the authors propose a sociology of the perception of prices, rather than a sociology of prices themselves. Regardless whether prices are eventually deemed absurd or reasonable, the monetary valuation process that results in prices remains an "analytical puzzle", (Fourcade, 2011). Shifting the focus from practical valuation operations in "the economy" to scientific pursuits in economics, the mystery of prices lies in the circularity of economic theories: "[e]conomists […] described markets as price making contexts, and then explained prices as things that are made in markets" (Çalışkan, 2007).

The theoretical move accomplished by sociologists and anthropologists, who have suggested that economic processes can be analyzed as social and cultural processes, has not solved but only relocated the puzzle of prices from the economic to the social realm (Çalışkan, 2007 ; Çalışkan and Callon, 2009). Tackling this mystery, economic sociology scholars have focused on the problem of the formation of market prices, with the objective of explaining prices and identifying their social determinants. Authors of states-of-the-art articles dedicated to the problem of price formation regret the lack of a theoretical ambition to produce a strictly sociological explanatory system accounting for price formation independently from economic theory (Beckert, 2011 ; Fillieule, 2008). However, they acknowledge that the use of sociological analytical tools has enabled to exhibit new sets of empirical factors influencing price formation.

Jens Beckert offers a typology of the answers brought to the question of price formation (2011). Most explanations are based on the idea that economic objects (such as markets and prices) are social objects, and thus can be explained using the classic sociological conceptual toolbox. For instance, price formation may be explained in terms of networks, drawing on Mark Granovetter's claim that markets are embedded in social relationships (2005). In this perspective, prices can be explained by the market participants' relative positions in the

networks that interlink them. Other researchers study the influence of regulatory institutions on price formation, following the path opened by George Akerlof, who analyzed the market for second-hand cars (1970). Alternatively, price formation may be explained by the "cultural meaning" assigned to prices by economic agents. Beckert includes variegated works in that category, various contributions examining the cognitive and cultural resources put to work by economic agents when they engage in valuation or calculative activities and when they form expectations (Barrey, 2006 ; Çalışkan, 2010 ; Callon and Muniesa, 2003).

The prices I wish to discuss in this chapter (experimental prices) offer a different type of mystery. Experimental prices being the manufactured product of protocolized operations, they do not mysteriously form on a market; they are carefully elaborated. As a consequence, the research question of this chapter will not consist in explaining mysteriously formed prices, but in describing the processes by which actors deliberately craft, explain and justify them. Scholars in economic sociology have engaged in such analyses, particularly in cases where there is no stabilized, black-boxed[193] "market price" to account for, because the markets under study were either very fragile, or failed to emerge. This fragility, or non-emergence of market prices can be related to the nature of the goods or services exchanged: their commodity status is not obvious. Actors may experience moral discomfort to assign a monetary value to "priceless" things. How does one put a price on the life of a deceased child (Zelizer, 1994)? Or on a ruined landscape (Fourcade, 2011)? Fourcade stresses that the definition of "peculiar goods" is highly contingent on place and time: while it is no longer acceptable to buy and sell human beings in most places of the world today, it has become acceptable to purchase rights to pollute in some.

Alternatively, "price discovery" may fail because of the diverging conceptions of "economic theorists, neoliberal policy advocates, and actual entrepreneurs" about how prices should emerge (Robertson, 2007). In their search for the price of a Water Quality Trading credit – this system of regulation of water pollution is a "cap-and-trade" mechanism, similar to the European market for carbon emission credits –, the actors (bankers, regulators) experienced difficulties to define water quality, the commodity to be exchanged on that regulatory market. Because of the commodity being so poorly defined, the bankers were helpless: they did not know how to proceed to set a price. Yet, the economists and the public authorities involved in the process

[193] In the sense used in early Actor Network Theory works to describe a situation where the process of reciprocal adjustment between a technical device and its users has succeeded, and the device is routinely used without being questioned (Latour, 1995).

carefully refrained from offering any guidance, waiting for the private actors to spontaneously produce an undistorted market-clearing price.

In other cases, actors do not hesitate to elaborate prices. Liliana Doganova and Vololona Rabeharisoa discuss the particular case of orphan drugs (2016). The emergence of a market for orphan drugs was hampered by the small size of the population of potential patients, and only made possible after negotiations between patient organization, regulatory bodies and the pharmaceutical industry. In that context, prices also emerge as the result of multi-stakeholder negotiations:

> "Discussions on the fairness and accuracy of prices for orphan drugs reveal the capacity of prices to serve as a problematizing device of how and to what extent we collectively prize things. Conceived as such, prices become a matter of public discussion in which patient organizations increasingly claim a role to play." (Rabeharisoa and Doganova, 2016, p. 13)

Price engineering is also frequent in the case of energy. Guillaume Yon shows how historically, the pricing of electricity in France is aimed at organizing not only the energy sector, but also the whole national economy. Thus, the pricing of electricity is fraught with a certain idea of the general interest, as it is formulated by the engineers-economists of EDF, the French electricity public monopoly (Yon, 2014). Studying the case of feed-in tariffs for the prices of wind energy, Trine Pallesen shows that prices may be used as policy-instruments (2016). There is a "politics of pricing" at work: struggles and disputes around energy prices are political struggles in which various visions of the public interest and of the desirable future oppose one another. In a way, this chapter also deals with energy prices, and these prices are also geared at performing political functions. But contrary to the prices of energy such as those studied by Yon or Pallesen, the pricing of a Kianga solar light does not involve the intervention of regulatory instances or state entities.

The entanglement of prices and politics takes micropolitical forms. The pricing experiments at hand in this chapter are a joint initiative of Kianga Energy Ltd. and of the economists of the Research Group 5. The question of the public interest is present, but not in the form of an arbitrage between competing orientations. Rather, the Research Group 5 is trying to identify prices such that Kianga Energy Ltd.'s business can be regarded as a project pursuing a form of public interest and promising a desirable future. By describing the crafting of the price of a small solar light, I attempt at grasping some of the contemporary mutations that affect the field of poverty action.

The prices that are under scrutiny in this chapter are not market prices, they are experimental prices. This implies two major differences. First, these experimental prices precede the market, both logically and chronologically. Prices are not expected by the protagonists of the Kianga Energy Research Project to form as a result of free interactions on the market. Rather, in this case, defining the right prices is regarded as a necessary condition for a market to emerge at all. Second, prices are not expected to spontaneously emerge from market exchanges, they are in this case the product of careful, deliberate, protocolized, action. The prices at hand in this chapter also differ from the prices that are elaborated by regulatory instances to steer the economy or reach specific policy objectives. The experimental prices described in the chapter are part of a very ambitious and yet somewhat desperate undertaking: the objective of the experiment is to test whether a market for the Kianga solar lights can exist at all. Moreover, the *in vivo* making of experimental prices engages with the villagers in a very intense way; experimental prices are active and productive in the villages. Such experimental prices are unusual and describing them will not contribute much to the discussions about where prices come from. But they have powerful world-making qualities, and describing them sheds light on the agency and political productivity of prices.

Section 1: Crafting prices for the average poor

This first section qualifies the type of prices that the Research Group 5 seeks to elaborate with the pricing experiments. The way these prices are conceived reveals something about the way the Research group 5 imagines the villagers. The first sub-section shows that the Research Group 5 is trying to craft prices at the village-scale. The second sub-section describes and discusses the methodology for eliciting prices used by the Research Group 5. The third sub-section argues that the Research Group 5 aims at crafting generic prices, that apply to everyone, regardless of their personal circumstances.

1.1. The villages as epistemic units

As it is repeatedly stated in the different reports written by the Research Group 5, the aim of the business model testing experiments is to optimize Kianga Energy Ltd.'s pricing structure. The researchers seek to maximize two variables: the take-up rate and the usage of the solar lights. The take-up rate describes the proportion of households who purchase a solar light.

Usage refers to the frequency at which the households purchase a battery recharge, which is correlated with how often they use the light. Both the take-up rate and the usage of the lights are proportions, meaning that they describe an aggregate population. The prices crafted through the experiment aim at ensuring that in each village, a fair share of the households do proceed to the purchase of a solar light and regularly use their lights afterwards, securing a sustained flow of income to the local micro-businesses.

Despite being showcased by the Research Group 5 as a crucial component of the Kianga Energy Research Project, the business model testing experiments are implemented in a relatively small number of villages compared to the other branches of the experiment. The voucher experiment, testing different prices for a solar light, is implemented in 20 villages. The coupon card experiment, testing different prices for a battery charging services, is implemented in 30 villages. As the two experiments do not overlap, there are 50 villages in total in which one or the other business model testing experiment is implemented, which represents exactly one third of the 150 villages "treated" with the creation of a Kianga micro-business, and one sixth of the 300 villages surveyed as part of the experiment, including the control group[194]. But these 50 villages are surveyed very extensively: data is collected on all the households. Remember that in the most basic layer of the Kianga Energy Research Project[195], the four micro-entrepreneurs and their families are the only members of the community on whom data is collected – they are surveyed very thoroughly, during intense and time-consuming interviews (as described in chapter 2). In the pricing experiments, all the households are surveyed, but the data collected on each household is very limited in its scope. The only pieces of information recorded are the name of the household head, the presence of children under 18 in the household, and whether or not the household decides to purchase a solar light.

So, the sample used for the pricing experiments differs a lot from the sample used for the other components of the project. The business model testing experiments take place in a much smaller number of villages, include a much larger proportion of the households in each village, and rely on much fewer variables than the other branches of the Kianga Energy Research Project. The other branches of the experiment dig very deeply on four specific points in each village, whereas the pricing experiments probe a much larger but much shallower area. The relevant epistemic

[194] Here I rounded the numbers for simplicity and anonymization purposes, but I conserved the proportions.

[195] As explained in chapter 3, the basic layer of the Kianga Energy Research Project is the RCT comparing villages in the treatment group in which a micro-enterprise of Kianga was created to villages in the control group in which no Kianga micro-enterprise was created.

unit in these experiments clearly is the village rather the household. The causality pattern explored in the pricing experiments is indeed different from the causality patterns explored in the rest of the project. The pricing experiments are not geared at investigating intra-household dynamics: the point is not to discover which factors make households accept or decline a given price, but to grasp the aggregate outcome of each household's black-boxed decision to accept or decline a given price. Because the pricing experiments look into village-level dynamics rather than intra-household dynamics, their implementation involves a very different type of encounter in the field. On the top of the four in-depth interviews per village that are conducted in every village of the experimental sample, the pricing experiments involve several-hour long village-wide gatherings. These events are very demanding for the fieldworkers, who are tasked to implement a very strict and complex protocol while interacting with a large crowd of villagers.

The pricing experiments, even more than the other components of the Kianga Energy Research Project, take the village as a relevant epistemic unit. The micro-businesses are village-based, and they are supposed to operate with a clientele exclusively composed of village inhabitants. The pricing experiments are searching for prices that would make this village-based business model sustainable. Because the villages are used as epistemic units in the design of the pricing experiments, they are expected to behave as stable, knowable entities, with a fixed population and clear limits. The issue of delimiting and stabilizing the villages crystallizes both methodological concerns (collect clean data, avoid measurement errors, etc.) and the distrust of the experimenters towards the villagers. In the coupon card experiment for instance, the price under testing is the price of a battery recharge. In each one of these villages, a hundred solar lights were distributed for free during a public lottery, to create a sample of light-users. The Research Group 5 worried that the village leaders might overstate the number of households, or declare some households several times under different names, in a strategic attempt at getting more solar lights. To prevent the village leaders to inflate headcounts, the Research Group 5 tasked the fieldworkers to conduct censuses and to list all the households inhabiting each village[196]. On one occasion, the villagers themselves worried that people might unrightfully take part in the experiment, and thus get access to resources they are not entitled to. The following incident happened in a village where the lottery was about to start.

[196] The census is recounted in chapter 2.

Lottery day, November 30th, 2016

> Some of the fieldworkers were bringing tables and banks outside, arranging a space to organize the lottery. Together with some other fieldworkers, I was filling in the blank spaces of the coupon cards with the validity dates of each coupon. Many villagers were already there, waiting for the lottery to start. As the drizzle turned into heavy rain, we all crammed in an empty house, on the village main street. We were so packed inside that we could barely move. It was very dusty; it must had been left unused for a while. As it is often the case in village houses, the windows were tiny and it was dark inside, all the more than the storm had darkened the sky. I put on my headlamp and kept writing dates on the coupons. Of course, I was the only one in the room who was equipped with a headlamp. Some of the fieldworkers were using the light of their cellphone. Most villagers did not have anything to produce light. Lorie and Désirée were preparing the lottery slips. They brought a pre-cut list of all the household heads of the village. They called the names one by one, and each time someone answered, they tore off the slip of paper with the name of the person on it, folded it carefully, and threw it in a cardboard box.
>
> Suddenly, at the sound of one particular name, people started yelling at each other, arguing. The fight was about one woman whose name had just been called. Lorie translated the dispute for me. Some villagers wanted to ban the woman from participating in the lottery. People disagreed whether she belonged to the village or not. Some wanted her to leave immediately. The criteria discussed to determine whether she could stay were the following: where was her house located? (Her house was indeed in the village). Where did she vote? Where did her husband live? (Her husband lived in a different village, but they had been separated for a while). Someone argued that the woman had built her house herself, with no help, and that she had been living in the village for several years. After a lot of yelling, it was finally decided that the woman could stay and participate in the lottery. Shortly after, another woman's legitimacy to participate in the lottery was disputed. That time, the villagers agreed that she could not be considered as belonging to the village, and she was crossed off the list.

The coupon card experiment made people discuss the borders of the village. What is a village and what does it mean to belong to it? Is it just a matter of geography? Is it an electoral circumscription? Is it a male-centered affiliation? The villagers taken in the experiment, and for whom the experiment represents an opportunity to accede to material resources, become the temporary objective allies of the experimenters in their attempt at clearly delimiting the village.

This reflection of the way the pricing experiments probe and question the space of the villages is part of a more general problem: how experimental prices act as world-making agents. So far, it remains unclear whether it is the prices or the experimental situation which exert a

transformative action on the villages; it will become clearer in the remainder of the chapter that the prices themselves act as world-making agents.

1.2. Take it or leave it: a price elicitation methodology used by the randomistas

The goal of the pricing experiments, as expressed by the Research Group 5, consists in estimating the price elasticity of demand, for the solar lights on the one hand, and for the battery charging service on the other hand. Price elasticity is a basic notion in micro-economics; it describes how a variation in price influences the variation in demand for a given product. Typically, the more elastic the demand for a product is, the steeper is the slope of the demand curve: a small increase in price results in a large drop in the demand for the product. On the contrary, demand for products that consumers cannot easily stop consuming is inelastic; for such products, demand remains relatively stable even as the price increases. The Research Group 5 seeks to observe how demand varies with the price, that is, to experimentally elicit the demand curves for the solar lights and for the battery charging service.

Different price testing methodologies are discussed in the *Handbook of Economic Field Experiment*, a manual edited by Esther Duflo and Abhijit Banerjee, two of the public faces of the RCT movement (Banerjee and Duflo, 2017b). The book can be read both as a practical guidebook and as a state of the art reviewing the field experiments conducted since the early 2000s and summarizing their findings. There is a subsection discussing price experiments in one of the chapters[197], also written by two prominent figures of the RCT movement – Pascaline Dupas has managing responsibilities at the J-PAL, and Ted Miguel coauthored a famous article with Nobel-recipient Michael Kremer[198] (Dupas and Miguel, 2017). Dupas and Miguel discuss

[197] Interestingly, the different methods to run pricing experiments are discussed in a chapter about health interventions, and more specifically in a section discussing the ways to stimulate the demand for preventive health products. There has been much debate among economists about whether or not health care for the poor should be offered free of charge or in exchange for a small fee. Proponents of low or zero prices argue that health-related goods and services bear positive externalities, meaning that they benefit not only to the individual or household who buy them, but also to the community at large (e.g. by reducing the prevalence of infectious disease). Thus, they recommend stimulating the demand for such goods or services by reducing prices. Their opponents argue that too low a price might fail to screen consumers who really need and value the product, resulting in a waste of limited resources. Experiments geared at eliciting people's willingness to pay for health took place to settle this dispute. Some of the early preventive health products pricing experiments have become textbook cases, and many other have been conducted since.

[198] This article recounts an experiment testing the impact of school-based mass deworming on the pupils' attendance (Miguel and Kremer, 2004).

three different methods to elicit a demand curve. The first one consists in surveying people and asking them how much they would be willing to pay for a given good or service.

> "The most commonly used willingness to pay (WTP) elicitation method outside of field experiments is stated WTP: people are simply asked how much they would be willing to pay for the product. The main problem with this measure is that it is not incentivized; therefore, respondents may not think hard enough before providing their answer. Different individuals may also interpret the question differently if not asked precisely enough: some may report what they would pay if they had access to credit; some may report a low WTP if they think their answer may affect future subsidy policies; and others may exaggerate their willingness to pay to please the survey enumerator, etc. For this reason, researchers have moved towards field experiments in order to observe the 'true' demand at each price point." (Dupas and Miguel, 2017, p. 36)

This method is deemed unreliable because it does not involve the respondents' actual money: they are just asked for a statement. Thus, people may either not care enough to ponder their answers, or they can make a strategic move and understate their "willingness to pay" if they expect their answer to influence future policy interventions. Arguing that people's preferences are better revealed by their candid actions than by their words, the authors discuss the relative advantages of two experimental methods involving the respondents' money. One of these methods, called the "take-it-or-leave-it" or "TIOLI" method, corresponds to the design of the pricing experiments used by the Research Group 5.

> "Take-it-or-leave-it, or TIOLI, experiments randomize the price that an individual faces, observing whether that individual actually purchases the product at that price or not. This is a straightforward revealed preference mechanism." (Dupas and Miguel, 2017, p. 37)

This method is described as the simplest and most accurate way to elicit a demand curve. One of its disadvantages compared to BDM, the other experimental method presented in the book chapter (Becker DeGroot Marschak, after the three economists who invented it), in which the respondents are asked to bid a price[199], is that TIOLI provides information at the aggregated level only.

[199] The participants in a BDM mechanism are asked to bid the maximal price they would agree to pay for a commodity. If their bid falls under a certain threshold (that, of course, they do not know beforehand), they cannot acquire the commodity. This is supposed to prevent the players from voluntarily underestimating the price of the commodity: if they do so, they take the risk of not being able to purchase the commodity at all. If the price they bid is above the threshold, the players can acquire the commodity at the price they announced anyway. This is supposed to prevent them from voluntarily overestimating the price of the commodity. This rather complicated mechanism is supposed to provide incentives to the players to bid their "true" maximal price.

> "BDM has the advantage of telling us, for each individual in the sample, what their exact willingness to pay is, whereas TIOLI only informs us of the share of the sample willing to pay at least a certain price." (Dupas and Miguel, 2017, p. 37)

This provides an important indication on the type of prices at stake here. The BDM method let the initiative to the participants: they propose a price, which is then accepted or rejected by the mechanism. The take-it-or-leave-it works the other way around: each participant is faced with a price which she can take or leave.

The Research Group 5 tests eight different prices for a solar light (0; 200; 300; 500; 800; 1000; 1500 and 2000). Which proportion of the villagers faced with each price will purchase the light? Presumably, all the villagers faced with a zero price (they can get the light for free) will take it. Most of the villagers faced with the price 200 will also probably buy the light, at such a low price. On the contrary, we can assume that very few of the villagers faced with the price 2000 will purchase the solar light. What happens in between? The researchers seek to identify the threshold above which the demand collapses. The same strategy is used to create the demand curve for the battery recharges: the researchers test eight different rates for the service (0; 50; 60; 70; 80; 120; 100 and 100/0). The last recharge rate, marked 100/0, consists in rewarding the purchase of the first three recharges at the price of 100 by two free recharges, each month. The researchers seek to identify the threshold above which the villagers will stop using the service. What makes the pricing experiments so interesting is that the eight different prices are tested simultaneously, within each village.

1.3. Depersonalizing prices

The point of the experimental method in general (and of RCTs in particular) is to organize the variation of one variable (here, the price) in order to observe the effects of such variation on one or several other variables (here, the village-level demand for a solar light and for a battery recharge).

> "In experimental science you need variation, but not too much variation. You need variation of a special kind: factors or conditions must vary *one at a time*. The reason is simple: this special kind of variation is required in order to make sure that any correlation between dependent and independent variables (or treatments) reflects a *causal relation* between them. *The perfectly controlled experiment is the ideal design to find out about the causes of phenomena*." (Guala, 2005, p. 69)

Varying only the price while keeping the other variables constant, in this case, means selling a same good or service at different prices to different customers. This may appear as a delicate

operation, introducing unfairness in transaction. Price is indeed a particular object, the variation of which is often fraught with moral meanings. It is for example said that the Quakers started practicing equal prices for all their customers out of respect for "the seed of God" that exists in all people, regardless to their social condition (Kent, 2007 [1983]). This is, however, a very situated interpretation of fairness; anthropologists Jennifer Alexander and Paul Alexander show that the notion of price fairness is culturally grounded (1991). Posted prices are not necessarily fairer than personalized prices resulting from bargaining:

> "where both participants have equal power to negotiate and are equally well informed, bargaining is a quick, efficient and equitable means of agreeing on a price. Where one party is more powerful or better informed, the conventions of bargaining are maintained, but one party effectively sets the price – which is very similar to a system of posted prices." (Alexander and Alexander, 1991, p. 507)

In situations of bargaining, the decoupling of the price from the object for sale is achieved through orality: price is not inscribed anywhere, and each client has to engage a conversation with the dealer and negotiate with her, resulting in the production of a personalized price. The more tenacious bargainers will get better deals than other clients. The shopkeeper might also give better deals to customers with whom she has closer relations.

More recent and sophisticated pricing techniques, based on data analysis, achieve a personalization of prices in a less artisanal way (Moor and Lury, 2018). Let us take the case of the "yield management" practiced by most airlines, and also by the main French train transportation company (Finez, 2014). Yield management consists in charging each consumer the highest price she is willing to pay. Two passengers may be seated on a same train bound for the same destination and travel in the same class, and yet they pay different prices. Prices depending on their personal characteristics (e.g. their age, whether they hold a bonus card, the frequency at which they travel by train) and according to how they booked their ticket (how long in advance, online vs. at the station, etc.). The decoupling of the price from the service that is sold is achieved through the multiplicity of sale interfaces and of clients' profiles. Young travelers who buy their tickets online and long in advance will get much cheaper prices than middle-aged travelers who buy their tickets at the train station at the last minute.

In both examples (bargaining at a shop and booking a train ticket), the variation of price is *selective* and related to the clients' characteristics and choices. The experimental variation of prices organized in the pricing experiments seeks to create the opposite effect: it purposely disconnects the prices from the households' characteristics through randomization. The population of the villagers who will be faced with the price 200 is no different, on average,

from the population of the villagers who will be faced with the price 1500. A household with very little means (say, a destitute elderly widow) may be faced with the price 2000 when a better-off (say, a family owning a piece of land and hiring day laborers) may be faced with the price 300. Each experimental price is proposed to a random, and heterogenous subsample of villagers.

This provides an important indication on the type of price that the Research Group 5 is trying to craft. It is not elaborated as an entity that should be personalized and adapted to each individual circumstance. In a time of "re-personalization" of prices in the rich world, through techniques such as yield management (Finez, 2014) or behavioral data analysis (Fourcade and Healy, 2017), the pricing experiments are geared at eliciting old-fashioned, posted fixed prices. This type of prices, that are publicly displayed and apply equally to all the customers without any distinction, is characteristic of the 19th and 20th century gradual shift towards more impersonal trade relationships and contributes to produce a "generic personhood" (Moor and Lury, 2018). But how *generic* is the personhood shaped through the prices of a low-cost, entry-level task lamps and of a battery recharge, one might want to object? Obviously, the design of products sold by Kianga Energy Ltd. achieves a very narrow targeting. But within this consumer segment, the crafting of the prices pulls in the other direction. The prices crafted through the experiment shape a generic figure of the ultra-poor off-grid consumer.

*

In this first section, I reflected on the type of prices the Research Group 5 is trying to elaborate. These prices are based on the village, imagined as a closed economic system. They are engineered for a tiny monopolistic market, which is contained within the limits of one village. Moreover, the prices are elicited through an experimental technique that is based on revealing collective, aggregated preferences rather than individual preferences. The point is not to accommodate a variety of situations, and to capture the whole market, but to identify prices such as a reasonable share of the village can afford them. So, quite counter-intuitively, the experimental variation of prices across the villagers is not aimed at achieving price personalization, but the very opposite. The prices crafted through these experiments contribute to shape a generic figure of the ultra-poor consumer, rooted in her village and participating in a small, auto-sufficient economic circuit.

Section 2: Turning prices into experimental objects

Whereas the previous section focuses on what the Research Group 5 tries to achieve, the present section focuses on how exactly they proceed to achieve it. It describes how prices are turned into experimental objects. In the first sub-section, I list the various conditions that a price must satisfy in order to be turned into a suitable experiment object.

2.1. Turning prices into experimental objects: technical specifications and constraints

Often, RCTs are clustered, meaning that they are randomized at the village level. All the inhabitants of a village share the same experimental status: either they are all part of the treatment group, or they are all part of the control group. Randomizing at the village level rather than at the individual or household level can be done for different reasons. Some treatments for example, are necessarily implemented at a collective level. If the intervention consists in equipping water sources with chlorine dispensers, or appointing an extra teacher at the local school, it will affect the whole community using the water source or the school. The main component of the Kianga Energy Research Project (the creation of a micro-enterprise) is randomized at the village level for this reason. Another common motivation for randomizing at the village level pertains to ethical considerations: the experimenters might want to avoid creating conflicts or resentment between villagers who access resources through the experiment and their neighbors who do not access resources because they are assigned to the control group. The pricing experiments, however, are randomized at the household level.

There is a practical reason accounting for this choice: the pricing experiments affect the micro-enterprises' business. The price of the lights conditions the size of the micro-enterprises' clientele. Imagine a village in which only the price 200 was tested: most of the households would probably redeem their voucher and get a solar light at such a low price. On the contrary, in a village where only the price 2000 was tested, very few villagers would purchase a solar light. The micro-entrepreneurs, whose main activity consists in charging lights' batteries, would have very few clients. Combining the eight different experimental prices within villages is a way to preserve the business of the micro-entrepreneurs in all the villages. Another reason brought forward for randomizing the pricing experiments at the household level is statistical power, which is regarded as "absolutely critical" by the Research Group 5. The statistical power refers the likelihood to detect an impact, if there is an impact to be detected. It increases with

the sample size, and a sample made of households is about a hundred times larger than a sample made of villages.

We already knew that the Research Group 5 needs to make the prices vary in a random manner, independently from the personal characteristics of the villagers. We also knew that the prices must vary while the commodity for sale (the solar light or the battery charging service) remains the same. Moreover, the eight experimental prices must be simultaneously tested in each village. This last point matters, because the villagers cannot fail to realize that there are different prices in circulation, leading to situations that may be experienced as absurd or unfair. This makes the presence of the fieldworkers necessary, to supervise the sale and enforce the random pricing. Finally, these experiments are run with real money, in villages where people are extremely poor. The Research Group 5 plans on giving the villagers a few days between the moment when they discover the price they are assigned and the day of the sale. In this way, households have some time to make their decision and, if they do decide to make the purchase, to gather the money. This makes for the last specification: the price must reach the villagers before the solar lights do.

2.2. Creating standalone prices

How to communicate the experimental prices to the villagers? The price of a solar light must vary within villages; eight different prices, randomly allocated to the different households, must coexist in each village. The same thing goes for the price of a battery charging service: eight different prices must coexist in the same village. Thus, the price cannot circulate as one single information shared by the whole village. How to ensure the multiplicity of prices within the same village? How to randomly attach one particular price to one particular household? Prices cannot be publicly announced or displayed because they do not apply to everyone alike. They cannot be physically attached to the good or service they refer to because they must circulate by themselves. The solution adopted by the Research Group 5 consists in materializing the prices into standalone objects. Material prices can circulate on their own, in a random manner. Let us insist that the originality here is that prices are made into standalone objects, not that they exist in a material form. Prices, in general, are material entities. Even in situations, such as financial trading, where prices may appear as particularly elusive and abstract entities, authors argue that they still take one physical form or another.

> "The forms of embodiment of prices are various – the sound waves that constitute speech; pen or pencil marks on paper; the electrical impulses that represent binary

> digits in a computerized system or encode sound over a telephone line; hand signals in 'open-outcry' trading pits that are too noisy for voices to be heard; and so on – but are always material." (Beunza, Hardie and MacKenzie, 2006, p. 729)

Beunza and colleagues insist that prices cannot be analyzed as "disembodied information". According to them, the materiality of prices matters because "their physical embodiment affects the extent and speed of their transmission", and thus influences the whole trading process. Let us take a closer look at the way prices are materialized in the Kianga Energy Research Project.

I have referred to the two pricing experiments as the voucher experiment and the coupon card experiment; this is how the Research Group 5 and the field teams called them. Both pricing experiments are informally named after the material artefacts (the printed piece of paper or cardboard) that are distributed to the villagers to physically embody the price.

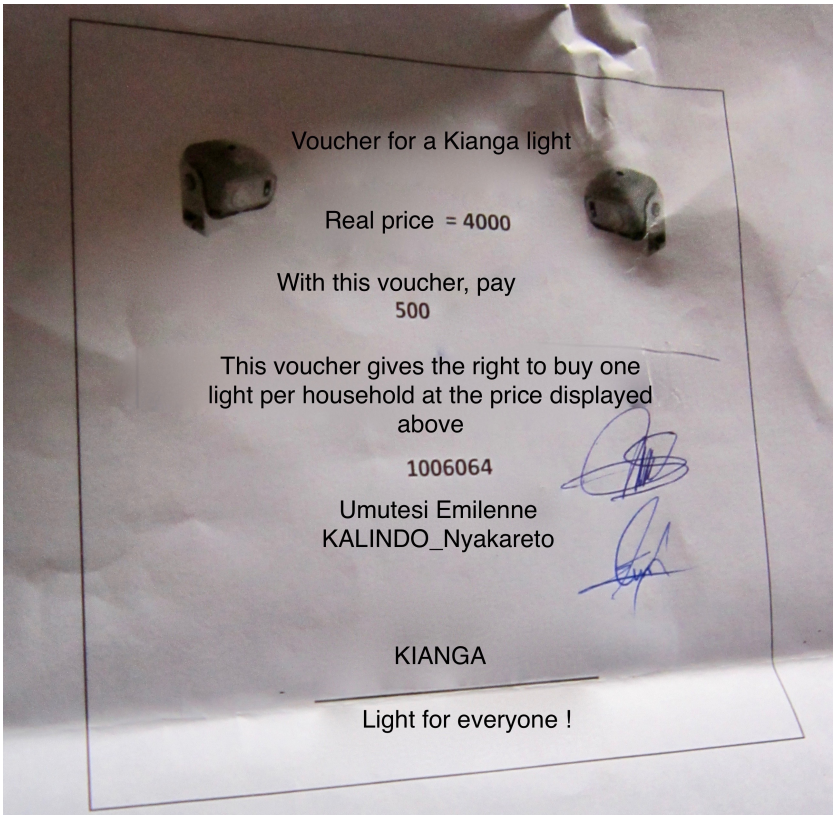

Figure 15: An edited, anonymized, translated version of a used voucher

The picture above (fig. 15) is a close-up of a voucher, printed on one side of an A4 size sheet of paper. The picture is heavily edited for anonymization purpose: the name of the voucher's recipient as well as the names of the village and county are replaced with fictional names. All the inscriptions in the language of the country are replaced with their English translation. The currency in which the prices are expressed is erased. This is a used voucher, photographed at

the end of the sale. The voucher is wrinkled: it bears a folding mark, and some crumples, from being carried around and passing from hands to hands. It was signed twice with two different blue pens, by two different fieldworkers, on the day of the sale. The first signature attests that the voucher holder paid the price indicated on the voucher, and the second signature attests that the solar light was delivered to the voucher holder: the transaction has been completed.

This voucher was distributed to Umutesi Emilienne, a woman who had been previously registered as the head of her household, during a census conducted in her village by EvaP's fieldworkers. She lives in the village of Nyakareto, located in the county of Kalindo. Umutesi Emilienne's household was assigned a unique seven-digit identification number, that is displayed just above her name.

Two different prices appear on the voucher. On the top of the page, between the two representations of the Kianga solar lights, the "real price" is indicated: a Kianga solar light costs 4000. But the price offered to Umutesi Emilienne is 500. What does this "real price" of 4000 refer to? Outside of the Kianga Energy Research Project, the Kianga lights are not systematically sold at the price of 4000. Different prices are charged, depending on the terms of each particular transaction. Over the course of my fieldwork, I heard and recorded different prices, ranging from 1000 to 7000, described each time as the "normal" unit price of a Kianga light. When I asked Musaza, Kianga Energy Ltd.'s country director, to explain why there were so many different prices, I got the following answer: 1000 is the price that is charged when there are high subsidies, and 4000 is the price charged when several villages organize a bulk purchase, most of the time with the mediation of an NGO. The highest price, 7000 is the unit price that is charged when there is no public subsidies and no bulk purchase.

On the documents written by the Research Group 5, several amounts are described as the normal price of a Kianga light. In the initial research proposal submitted to Womenergy, 4400 is indicated to be the light's full price. But the three different successive versions of the experimental protocol for the implementation of the voucher experiment display different amounts. On the first two versions of the protocol, implemented in early phases of the project, 3000 is indicated to be the "full price" of a light. In the third version of the protocol, there is a typo: the full price is first indicated to be 3000, and a few lines below on the same page, 4000. This mistake might reflect some collective hesitation among the Research Group 5: should 3000 or 4000 be the "full price" or "normal price" communicated to the villagers? From these elements, I conclude that the normal price of 4000 is a fictional price, set semi-arbitrarily for the purpose of the experiment. It is a "prosthetic device", which is not produced to actually

enable a transaction, but for the purpose of influencing further decision-making processes (Çalışkan, 2010). In comparison of this prosthetic price of 4000, any of the prices proposed in the experiment corresponds at least to a 50% discount.

The idea of discount is actually very important: on several documents, the Research Group 5 refers to the vouchers as the "discount vouchers". All the prices tested over the course of the experiment are presented as discounted prices compared the prosthetic price of 4000. To a certain extent, this experimental voucher can be compared to the promotional vouchers distributed by retailers to their clients to spur further purchases. But usually, promotional vouchers display the amount that the client will *not* have to pay. Promotional vouchers are used as a substitute to a certain amount of money. They figure how much the client will save, be it in percentage ("20% off!") or in amounts ("save $5 on your next purchase!"). Promotional vouchers figure a credit. Gift vouchers work the same way: they can be exchanged for a specific good or a service instead of a corresponding amount of money. Promotional or gift vouchers can replace money during a transaction, whereas the Kianga experimental vouchers must be matched by the amount of money displayed on them for the transaction to happen. In that sense, they resemble price labels. Like a price label, the experimental voucher announces the price that the client is expected to pay for a given object. But labels are usually displayed on the item that is for sale, or close to it, so that the customer understands which item they refer to. By contrast, the vouchers are distributed to the villagers as standalone pieces; they are only loosely connected to the solar lights. Strikingly, the relationship between the voucher and the solar light is the exact opposite of the usual relationship between a price label and the item for sale. Usually prices are written on the item for sale; whereas in the Kianga experiment, the item for sale is pictured on the voucher. Price labels are usually a small material representation of the price stuck on an item for sale. In the Kianga experiment, a small material representation of the item for sale is printed on the materialized price.

What is this voucher then? It is a materialized price featuring several remarkable characteristics. It is only loosely connected to the solar light for sale, by a low quality, black and white representation. It is strongly connected to a particular recipient, whose name is written on it; this strong connection is the result of a random matching process.

2.3. {Price}-worlds

Let us suppose for a minute that the vouchers were not edited in the name of particular people, and that the villagers were allowed to trade vouchers. If this was the case, they might organize

a specific repartition of the prices. For instance, they might want to attribute the cheapest prices to the poorest households, or to the widows, or to any other group identified as being in the greatest need for a solar light. Alternatively, the villagers receiving a voucher displaying a price that they cannot afford might simply pass it on to a friend or neighbor, until as many vouchers or coupon cards as possible are paired up with a household that is willing and able to use it. But we have established that the intention of the pricing experiments is the very opposite of the intention of the techniques of personalization of prices. In the experiments, the multiplicity of prices is not sought-after *per se*; it is a temporary protocol aimed at testing eight different prices to pick only one in the end. Ultimately, the aim of the voucher experiment is to produce one unique price that will apply to all the villagers alike, whatever their situation may be. In other words, each one of the eight experimental prices must apply as if it was the only one, and as if it was applying to the whole village, from the more destitute to the more affluent household.

The voucher experiment separates the villages into 8 virtual layers, each layer simulating a state of the world in which only one price exists and applies indifferently to everyone. I shall now introduce a descriptive tool that I devised to describe and reflect on the experimental multiplication of worlds accomplished through the random distribution of the vouchers within villages. I call these virtual layers "{price}-worlds". The "voucher" experiment creates eight {price}-worlds, all counterfactual to each other:

- the {0}-world
- the {200}-world
- the {300}-world
- the {500}-world
- the {800}-world
- the {1000}-world
- the {1500}-world
- the {2000}-world.

The fact that the villagers are prevented from trading the vouchers theoretically makes the different {price}-worlds hermetic to each other. A person who receives a voucher displaying the price of 1500, for example, is trapped into the {1500}-world. She cannot go to any other {price}-world, and she cannot let another household in her {price}-world either. Each {price}-world is populated by households who are willing and able to pay the {price}, and also by households who are unwilling or unable to do so. The goal of the experiment is to estimate the

proportion of households who are willing and able to pay in each {price}-world. If the cheapest {price}-worlds were inhabited only by the neediest, and the more expensive {price}-worlds only by the better-off villagers, the experiment would fail. In theory, the population assigned to the {0}-world should be similar on average to the population assigned to the {200}-world or to the {1500}-world, etc.: by virtue of the randomized design, each {price}-world is counterfactual to any other. All the sub-samples are supposed to be similar to each other and every one of them is supposed to be representative of the whole village.

Umutesi Emilienne, the lady who received the voucher reproduced a couple of pages earlier (fig. 15), was randomly assigned the price of 500. This price is the most important piece of information displayed on the voucher: it is the discounted price Umutesi Emilienne must pay if she decides to purchase a Kianga solar light. The voucher allows her into the {500}-world. Once she is randomly oriented to the {500}-world, the only choice that she is left with is a binary, "take-it-or-leave-it" choice. She may decide to purchase the solar light at the price of 500, or renounce to the purchase altogether. Her name is clearly written on the voucher, preventing her to trade her voucher with another villager. The passport analogy accounts for the two main features of the voucher: it allows his/her holder to travel to a specific experimental space, and it is associated with a unique identifying number and strongly attached to one person, to the point that an exchange is described as a "fraud" by the Research Group 5 in an internal note. The idea that the voucher works as an experimental passport calls for the notion of experimental borders, on which we will come back in the last section of the present chapter. As a result of the experiment, the villagers are confined to one {price}-world and cannot travel to another world that would suit them best. The impermeability of the experimental borders is a great concern for the experimenters: the fieldworkers are tasked to act as border-keepers.

If the experimenters are weary of "fraud", it is because they are well-aware of one limitation in their experimental design: the villagers cannot fail to discover that there are several {price}-worlds in their village[200]. In an ideal experiment, the villagers would not be aware of the existence of the other {price}-worlds constructed in their village. This way, they would make their decision whether or not to purchase a solar light only considering the one price they are assigned to. Whereas each {price}-world is supposed to simulate the only possible state of the world, the villagers soon realize that several {price}-worlds coexist, layering on the top of each other in the village. It is likely that their decision whether to purchase the light is influenced not

[200] Informal interview with Patrick, the research manager at Evidence against Poverty.

only by the price they got, but also by the relative position of the {price}-world in which they are confined relatively to the other {price}-worlds. It is also likely that some of them will try to enter into a cheaper {price}-world.

The experimental prices, turned into material artefacts, project virtual worlds with very real constraints for the villagers. This is even clearer with the coupon card experiment. The coupon card experiment aims at testing the price elasticity of the demand for a battery charging service, over the course of three months. With the coupon card experiment, the researchers investigate the following question: how does the recharge rate affect the frequency at which the households recharge their solar light's battery? While the voucher experiment tests the villagers' capacity to face the upfront cost of the light, the coupon card experiment tests the villagers' capacity to make regular payments. The coupon card experiment relies on the same principle of the multiplication of {price}-worlds used in the voucher experiment. Within the same villages, different households will have access to an identical service at different prices, assigned in a random manner.

Whereas the random assignment of the households to one specific {price}-world was made with a statistical analysis software in Evidence against Poverty's office for the voucher experiment, it takes the more artisanal form of a public lottery in the coupon card experiment. The fieldworkers bring a hundred solar lights to each village. Eight of them are distributed to the four micro-entrepreneurs: two for each one of them. The 92 remaining lights are distributed for free to the winners of the lottery[201]. Each light is paired up with a coupon card, displaying a price, ranging from 0 to 120. This price become the personalized recharge rate of the household for three months: each time a household wishes to recharge its light's battery, they have to use one of the coupons, and to pay the corresponding price to the micro-entrepreneurs. All the experimental prices but one (120) are discounted, relatively to the price of 100, normally charged by Kianga microbusinesses outside of the experiment. On the day of the lottery though, the fact that 92 households will win a free light is way more emphasized that the fact that each light comes with a random recharge rate. When the lottery winners receive their lights, they are already fully charged, so they will not have to immediately worry about the recharge rate.

[201] Margarita Rayzberg dedicates an article to the public lotteries ("randomization ceremonies") organized as part of randomized controlled field experiments, and the way they frame and stage "fairness" (Rayzberg, 2018).

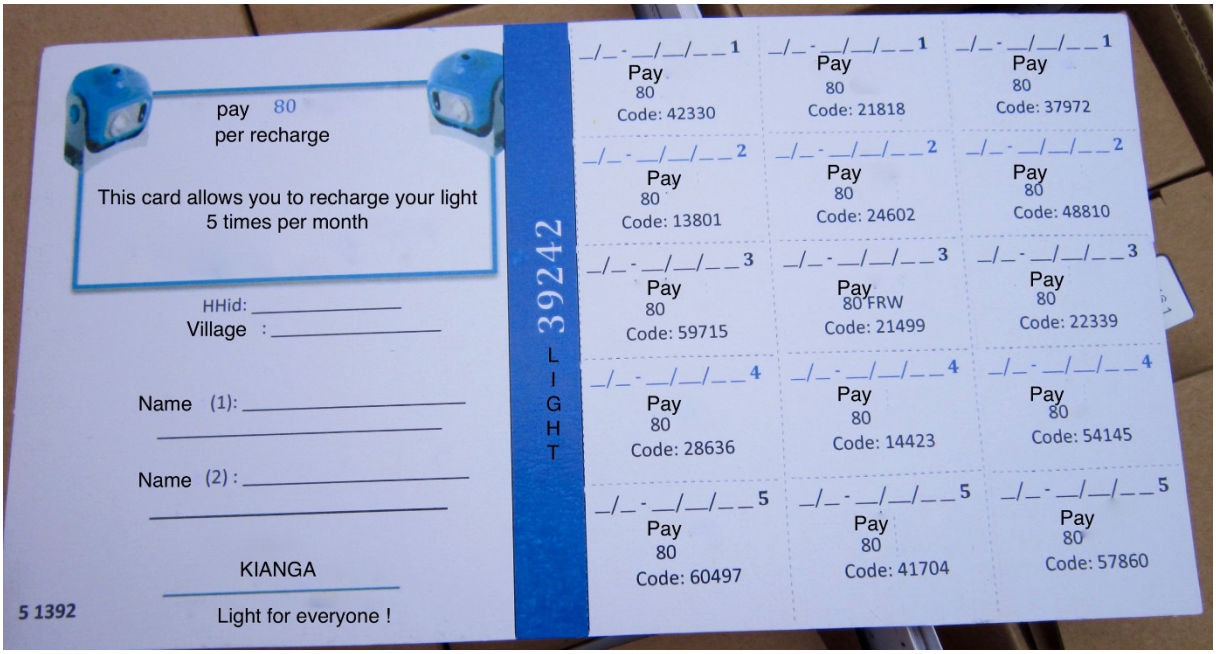

Figure 16 : An edited, anonymized, translated version of a coupon card

This picture (fig. 16) represents a coupon card before the beginning of the coupon card experiment. The picture is edited for anonymization purpose: all the inscriptions in the local language are replaced with their English translation. Like the voucher, the coupon card can be regarded as a passport. The one represented above (fig. 16) has not yet been attributed to a person. It will be after the public lottery. Each coupon card bears a five-digit number on its middle section, which corresponds to the serial number of one solar light. The villager who wins the solar light numbered 39242 will also win the coupon card numbered 39242 along with the light. Then, a fieldworker will fill in the blank spaces: she will mark down the name of the village, the name of the winner (usually, the household head) and the name of another person of the household. Only these two people are allowed to use the coupon card. The experimental protocol stipulates that users must bring their national ID cards whenever they want to redeem a coupon, so that the micro-entrepreneurs can check whether the coupon card holder is indeed someone whose name is written on the card.

This card is a passport for the {80}-world, a world in which it costs 80 to buy a battery recharge. In the coupon card experiment, as in the voucher experiment, eight {price}-worlds coexist within villages, all counterfactual to each other.

- The {0}-world
- the {50}-world

- the {60}-worlds
- the {70}-world
- the {80}-world
- the {100}-world
- the {120}-world
- the {100/0}-world

Whereas the vouchers, which are printed for a one-shot sale, are printed in black and white on regular paper, the coupon cards are designed for a three-month use. They are printed in colors, on thin cardboard. Over the course of three months, starting on the day of the lottery, the household will be allowed to recharge the light's battery at the price of 80. The right section of the coupon card is made of 15 detachable coupons, arranged in 3 columns and 5 lines. Each column corresponds to a period of one month. On the top of each coupon, there is a blank space to be filled by the fieldworkers with validity dates. The coupons on the right-most column will be valid from the day of the public lottery until exactly one month later. The coupons on the middle column will be valid from the day after the first column expires until exactly one month later. The coupons on the left-most column will be valid from the day after the middle column expires until exactly one month after. For each month during the experiment, the recipient household can recharge its light's battery up to five times. In each column, the five coupons are numbered from one to five, from top to bottom.

Each coupon displays the price at which the household is allowed to purchase a battery charging service, as well as a single five-digit code. During the three months of the experiment, the micro-entrepreneurs' business will be strictly regulated by the experimental protocol: they will not be able to use the charging equipment without typing in a coupon code[202]. The charger is remotely locked for the three months of the coupon card experiment. Whereas the voucher is designed to constrain the customers only, the coupon card is part of a system of constraints that

[202] Moreover, in the coupon card experiment, besides prepaying to Kianga Energy Ltd. the energy they sell to the end customers, the micro-entrepreneurs also extend credit to the Research Group 5. Indeed, most households have received a coupon card that allow them to purchase recharges for less than 100. About 10% of the households in each village even got a coupon card that allow them to recharge their lantern for free, up to five times a month. But while they sell recharges at a discounted price, or provide the service for free to their customers, the micro-entrepreneurs still prepay 50 to Kianga Energy Ltd. for each light they are charging. The Research Group 5 reimburses the micro-entrepreneurs afterwards to make up for the loss incurred due to the discounted price. So, while they are awaiting their reimbursement, the (supposedly ultra-poor) micro-entrepreneurs extend credit to the (hundreds of thousands dollar budget) experiment – how ironic.

also applies to the micro-entrepreneurs, who are turned into border-keepers to the {price}-worlds.

*

This section was dedicated to demonstrate that in order to be turned into objects suitable for an RCT, prices have to be materialized in a very specific manner. The description of the artefacts used to materialize prices provides some insights on the type of experimental constraint at play in the "voucher" and coupon card experiments. The prices, made into standalone, nominative objects, act as passes restricting the villagers' circulation between the different {price}-worlds created by the experiment.

Section 3: The micropolitics of prices

In the last couple of weeks of its baseline phase, the Kianga Energy Research Project accelerated markedly. The weekly phone meetings between Veronica and Morgan, the two principal investigators of the Research Group 5, and Patrick, the local manager of the project at Evidence against Poverty, revolved around the pace at which the data collection progressed. A deadline had been set, and by this deadline the fieldworkers had to complete the baseline survey with the four designated micro-entrepreneurs, in every one of the 300 villages of the sample. To meet the deadline, the fieldworkers started working on Saturdays. Besides, about 15 more experienced fieldworkers contracted by EvaP joined the Kianga Energy project. The five existing teams were dismantled and eight new teams were formed to incorporate the newcomers. Three fieldworkers were promoted and became team supervisors. Marek (the Field manager) and Patrick had to negotiate with their colleagues to bring more digital tablets from EvaP's office, to equip the new staffers.

In the last 50 villages of the sample, two more sophisticated experiments were to be implemented on the top of the usual intervention, which required the fieldworkers to learn new protocols and to perform new tasks: the voucher experiment, and the coupon card experiment. New teammates to get used to, a shortage of digital tablets, longer traveling times to the villages, new experimental protocols to learn… For the fieldworkers, the pricing experiments coincided with the most intense and straining sequence of the baseline phase. Most of the new recruits were previously working on a country-wide experiment about microfinance and financial literacy that had just ended. One of them complained that the Kianga Energy project was more

demanding than any other experiments she had been assigned to since she worked with EvaP. Marek and Patrick, on separate occasions, concurred. They explained that usually, EvaP only takes care of the surveys, whereas in the Kianga Energy Research Project, the staff also has to participate in the implementation of the intervention. Indeed, in that last couple of weeks of the baseline, the fieldworkers were involved in the distribution of the solar lights to the villagers, as part of the two pricing experiments.

This section focuses on how fieldworkers and villagers interact in the {price}-worlds created by the pricing experiments. It emphasizes the mix of excitement and stress that characterized the atmosphere during the implementation of the voucher and coupon card experiments. It describes the ways in which the experimental prices constrain the range of action of the villagers and fieldworkers. It also recounts the attempts of the villagers to cross the experimental borders between the {price}-worlds with the fieldworkers' complicity.

3.1. Unavoidable discontent

The voucher experiment requires several trips to each village, with a distinctive affective load each time. During their first trip, the fieldworkers carry out a census: they are tasked to find all the household heads in the village and to register them in a database. They crisscross the village, their digital tablet in a hand and a list of people to locate in the other. They do not explain why they are doing the census, and a few people refuse to participate, fearing that they might have to pay something later on as a result of the census. Mutual distrust and restraint prevail: the fieldworkers prefer not to say too much, and the villagers do not always dare to ask.

Based on this census, Marek (the Field Manager) creates the vouchers. Using a statistical software, he generates as many vouchers as there are households in each village. Each voucher is unique: it bears a seven-digit identification number, the name of the head of a household and a randomly assigned price. When the vouchers are printed, the fieldworkers go back to the village to distribute them. Lorie, one of the team supervisors, describes the distribution of the vouchers as easier and less demanding than other tasks performed by the field teams: the fieldworkers just need to find the villagers and hand them the voucher with their name on it. But she also describes it as a stirring moment:

> "It was moving to see people's reactions when discovering the price on their voucher. For example, an old lady who receives a voucher with 0; 200 or 300, it is touching. But old women who got a voucher with 1500 or 2000… It was so uncomfortable to give them the voucher! Because we know that 2000 is too high a price for an elder."

Ingrid, a fieldworker, a little vindictive, added that the villagers who had refused to take part in the census and who, as a result, did not get any voucher edited in their name, regretted their choice and asked for a voucher, any voucher, even one with a 2000 price written on it, to participate.

Some of the prices tested in the experiment are known to be too high right from the start; and people (villagers and fieldworkers alike) not only know it intellectually but also feel it affectively. Distributing a voucher for a {low price}-world feels like helping people, offering them an opportunity, while distributing a voucher for a {high price}-world is unpleasant, especially when the voucher recipient stimulates the fieldworker's empathy. The researchers also know that some of the prices they test are too high. From a pilot experiment conducted by one of them (Morgan, one of the principal investigators) prior to the onset of the Kianga Energy Research Project, the researchers already have some evidence showing that prices higher than 800 exceed the villagers' willingness to pay. Marek explained to me that the sample of prices was unevenly distributed to increase the take-up rate: there were twice as many vouchers displaying a price ranging between 0 and 500 than vouchers displaying a price ranging between 800 and 2000.

After receiving their vouchers, the villagers have a few days to make their decision and gather the amount of money corresponding to the price written on it. Then, the fieldworkers come back with the solar lights, for the sale.

3.2. Setting the stage

The sale is supposed to unfold in a very standardized way. In every village, the fieldworkers are supposed to follow the same chronological sequence and to organize a specific spatial disposition, described in a detailed experimental protocol. The protocol, elaborated by the principal investigators of the Research Group 5, takes the form of instructions given over the phone, and written notes. A written memo shows the five successive versions for the voucher experiment protocol: the distribution process has been updated several times, and the version I observe is the result of these successive adjustments.

Village of Nyakareto, first day of the voucher experiment

> Some villagers are already there: they have been waiting for two hours. They were told that the distribution would start at 10, and they came on time. Of course, we did not: we departed from EvaP's office a little late, stopped at Kianga Energy Ltd.'s office to pick up the cardboards full of solar lights, and arrived in Nyakareto around noon. We

> gather at a spot in the village where people are used to have meetings. Every village has one, it seems. It may be an empty house, or a grassy spot dotted with eucalyptuses, where people can sit and find some shade. It is a rainy day, so we all retreat to an empty house with a sheltered porch. The village leader opens the padlock. It is very dusty inside; it looks like it has not been used in a long time. On the wall, old garlands trace the mysterious word "Kopabik", suggesting that the house sometimes hosts celebrations. The villagers have already brought a wooden table and a wooden bank for the fieldworkers. Shoka, the team supervisor, asks the villagers to bring three more tables and more banks or chairs. Some villagers leave and come back shortly, carrying tables and banks in various sizes on their heads, bringing them from nearby houses. With this motley furniture, the fieldworkers arrange something like a circuit, with four different counters forming a loop. Counter 1 and counter 4 are set up under the porch, while counters 2 and 3 are inside the room. Behind the different tables, fieldworkers will be sitting or standing, performing different tasks, and the villagers will have to queue and then go from one table to the next, in the prescribed order.

The protocol was explained to the fieldworkers during a meeting held just before the beginning of the voucher experiment campaign. Marek, the Field Manager, carefully went through all the steps, using a paperboard. He put a lot of intensity and energy in his explanations; he wanted to make sure that the different teams would all follow the exact same steps. "We want uniformity in what we do!" he repeated. Later, in the villages, each team of fieldworkers carried a couple of copies of hand-written notes taken during that meeting by one of them (fig. 17). The protocol figures four rectangular tables, and under each table, a series of step-by-step, numbered instructions in the language of the country, with some English words.

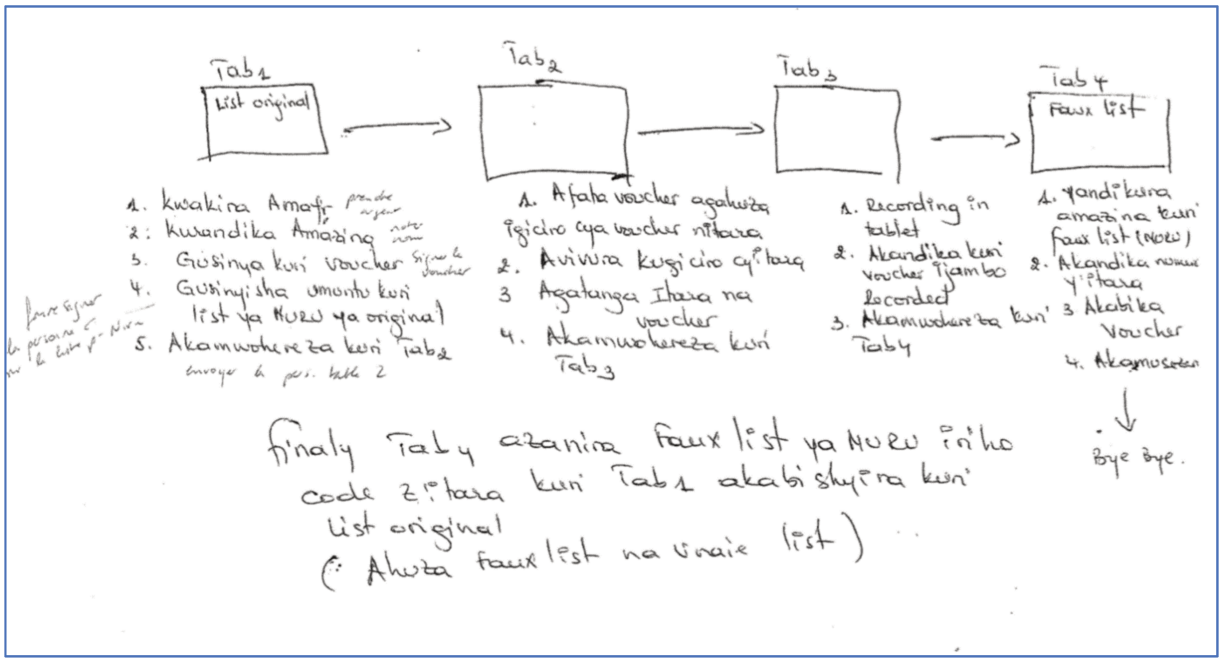

Figure 17: Voucher protocol: notes taken by a fieldworker

Some of the notes, in the smaller handwriting, under the first rectangle to the left, are mine. I translated the instructions into French – I found quite funny that the very first instruction (instruction 1 under the counter 1) says: “take the money”.

3.3. Enter the villagers

The villagers were informed of the light distribution date and time in advance. They came with their vouchers. Adrian, one of the fieldworkers, asks everybody for attention and explains to the villagers how they should proceed. Each person has the choice to purchase a light in exchange for the price displayed on her/his voucher, or give back the voucher and renounce to the opportunity of buying a light altogether. Shoka, the team supervisor, adds that the people who came with no money may simply return their voucher and go back without a light. Immediately, an old woman swiftly hands him her voucher “There, take it!”. Other people imitate her and give their vouchers back. Shoka collects the vouchers from the villagers who came with no money, or with too little money to pay the price they were assigned. There is no visible outburst of any particular emotion at this moment – I wish I could hear and understand what people say, though. Shoka starts a list on a sheet of paper: he inscribes the name and number of the first returned voucher, as well as the reason why the person decided to return her voucher. He asks me to continue the list. At first, the list lengthens rapidly. After a while, some villagers come again and ask their voucher back: either they changed their mind and decided to purchase the light after all, or they managed to borrow some money at the last minute. I find their voucher in the pile, and cross their name off the list (fig. 18). The picture is heavily edited: I erased most of the voucher for anonymity purpose. I circled in red the price displayed on the voucher.

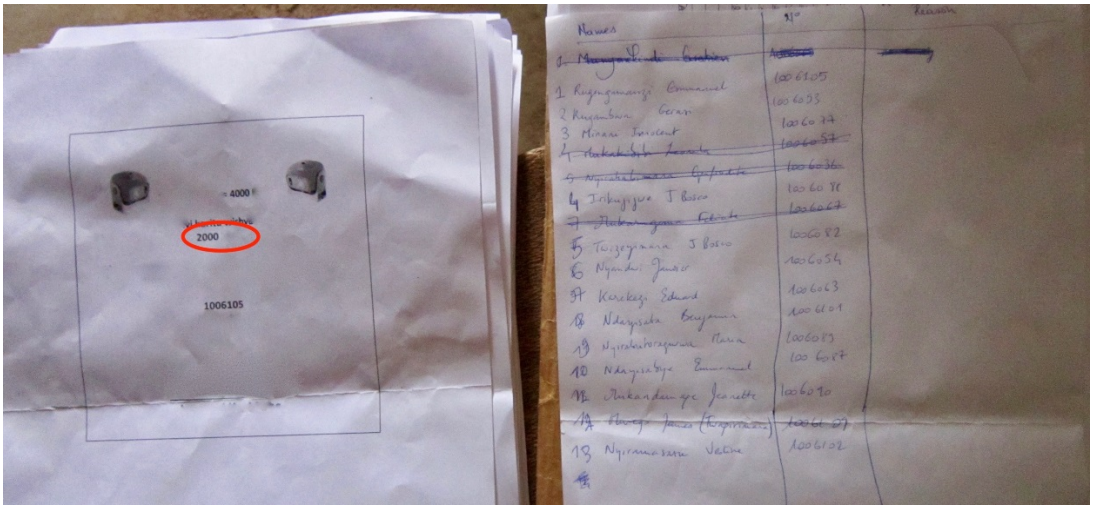

Figure 18: Stack of returned vouchers and corresponding list (picture is edited for anonymization purposes)

The villagers are given a few days to contemplate their vouchers and to decide whether they will use it or not, and if yes, to gather the money. But a lot of things happen in the heat of the moment. People come to the sale with the voucher, but decide not to use it, and sometimes change their mind again and decide to use it after all. These last-minute decisions are taken in the effervescence created by the experimental situation. A large crowd is gathered, possibly creating some emulation. Moreover, relatives, friends and neighbors are within immediate reach, which makes it easier to borrow some money if needed.

3.3.1. Counter 1: enforcing border control

The villagers who decide to buy the solar light wait in line to proceed to the purchase. At the first table, Adrian welcomes the villagers who brought money. He takes a look at the voucher and collects the amount of money corresponding to the price written on the voucher. He uses his own money to make change for the villagers who did not bring the exact amount. For each villager, Adrian fills in a new line in a table that looks like the following example (fig. 19):

S/N	Light number	Name	Village	Price	Signature
1		Wimana Jean-Claude	Nyakareto	200	[villager's signature]
2		Nyibizi Alfonsine	Nyakareto	500	[villager's signature]

3		Umutesi Philomene	Nyakareto	0	[villager's signature]

Figure 19: List 1 (voucher distribution)

The "light number column" is intentionally left blank: at that point, the serial number of the light is still unknown. Most transactions go smoothly, people just hand out the money and sign the register. Then Adrian signs the voucher to indicate that he collected the money from the villager, and sends her/him over to the next counter.

But a man comes with a voucher indicating 1000, and he only brought 800. He explains that he could not find 1000, but he brought 800. He hopes that a compromise can be found. Adrian seems to feel some discomfort, he would like to help, but he also knows that the protocol has to be followed rigorously. He talks to Shoka, the team supervisor, then calls Marek (the Field Manager) on the phone, hoping that "something can be done". Of course, Marek tells him to turn the man down.

A villager who carries a voucher displaying the price of 1000 is equipped with a passport for the {1000}-world, and this passport does not allow him to get into any {cheaper price}-world. The randomization is precisely supposed to prevent people from "self-selecting", as it is called in the experimental economics vernacular, into the {price}-world that suits them best. People are randomly invited into one {price}-world, and trapped in it. The experiment turns the villagers into virtual citizens of random worlds, and the fieldworkers into experimental border-keepers, who bear the emotional cost of forbidding the circulation between these eight counterfactual layers of the village. Each {price}-world is enforced upon its inhabitants as if it was the only one: if the unique price was {1000}, what percentage of the village households would actually buy a light? The principle behind a "take-it-or-leave-it" experiment is to estimate the proportion of people who can and cannot afford such and such price, so as to construct a demand curve for a given good. There is necessarily some discontent, it is even crucial to the success of the experiment.

Often, the villagers try to exchange their vouchers. If one villager got a {1000}-voucher she cannot afford, instead of returning it, she will try to give it to a friend who brought 1000 but who got a {1500}-voucher, or a {2000}-voucher. Of course, the experiment does not allow such exchanges: one cannot give or sell her passport to a friend whose passport allows her to travel less freely than you. Here again, the fieldworkers are expected to keep the borders between the {price}-worlds, by checking the villagers' ID cards. Sometimes, they indulge in

some empathy, and they accept to sell a light to a villager who brings another villager's voucher. These little breaches in the protocol create some shared relief among the fieldworkers. Nobody seems to blame the fieldworker who allowed an exception.

In one occasion, a man who had received a {1500}-voucher was trying to negotiate a lower price. An old lady, who had received a {300}-voucher and was about to return it decided to give her voucher to him. At first, the fieldworkers refused to take the voucher, that was in the old lady's name. They were sorry, but firm. Some time passed, and the man stayed around, hoping that he could negotiate something. Finally, the fieldworkers decided to accommodate him, and to sell him a light for 300 with the old lady's voucher. The old lady went as far as graciously lending her national ID card to the man, so that the fieldworkers could register it in the database. Another, even more striking breach of the experimental protocol happened on a different occasion, in another village. Kianga Energy Ltd.'s country director was in the village, training the four micro-entrepreneurs to use the charging equipment. He was older than the fieldworkers, tall, dressed in a formal suit and addressing the villagers with the charisma of a preacher. An elderly barefooted lady had come to the sale with only 500, when her voucher indicated 1000. She called out to him loud enough for people around to hear and asked if he would help her. After pondering the old lady's demand for one second, he answered "Sure, grandmother, I'll help you". Indeed, he later gave her a 500 banknote, and she bought a solar light.

These cases when the experimental intransigence softened remained exceptions. Overall, the experiment requires the fieldworkers to overlook the affective dimension of the situation (as explained by a fieldworker: "even if it is hard, we ought to follow the procedure.")

3.3.2. Counter 2: do the villagers really buy solar lights?

After giving the money to Adrian, the villagers go on to the next table. A fieldworker named Isidora, stands in front of a table where twelve rectangular cardboard boxes containing Kianga lights are arranged. With a thick black marker, the fieldworkers have tagged the boxes with prices. For each one of the cheaper prices, (0; 200; 300 and 500) there are two boxes of lights, whereas there is just one box of lights for the higher prices (800; 1000; 1500 and 2000). As Marek explained to me, the sample of prices was unevenly distributed to increase the take-up rate. Isidora checks the voucher duly signed by Adrian, and reaches in the corresponding box. She hands the villager a smaller cardboard box, containing a Kianga light, and then sends her or him over to the next counter. During the fieldworkers' training, Marek insisted that it was

very important that the villagers do not leave right after receiving their lights. Isidora told me that Marek advised the fieldworkers to lie to the villagers and tell them that their lights would not work if they skipped a step or left before the end of the process.

At some point, Isidora wonders what to do. Several villagers have come back to return their lights. They were not working, either because they were faulty, or because the battery was empty. Each time she proceeds to an exchange, Isidora makes sure that she picks the new light in the same {price}-box where she took the faulty one. At some point, in the box marked 200, only faulty lights or lights with dead batteries are left. She is not sure whether she can replace a faulty light taken in the box marked 200 with a functioning light stored in the box marked 2000. The box marked 2000 is still full, because unsurprisingly, the villagers who received a {2000}-voucher tend to renounce to the purchase. Isidora asks her team supervisor what to do. Shoka is not sure either, and in doubt, he prefers to tell her not to switch lights from one {price}-box to another. Isidora starts giving out dead lights to people who hold a {200}-voucher.

At that point, I cannot resist the urge to intervene, which I normally avoid. I insist that Isidora talks to Marek, the Field manager, as soon as he comes by – as usual, Marek has hired a moto-taxi man and he is cruising from village to village, checking on every team. When he arrives, Marek says that there is no problem exchanging lights from one box to another, "because the boxes were filled in a random manner anyway". So, before they are distributed to the villagers, the lights can be transferred from a box to another, from one {price}-world to the next. It is striking that the fieldworkers were so reluctant to move the lights from one box to the other. They know that the boxes were filled in a random manner, with lights that are all alike: they were the ones filling the box. But the prices tagged on the boxes have a strong agency, to the point of constraining the fieldworkers' range of action. They too become constrained by the {price}-worlds.

The fact that Isidora needs to exchange faulty lights after having distributed them also reveals another important element. When the villagers make the decision whether to purchase a light or not, they have never seen it. They have only seen the small black and white image printed on the voucher (fig. 15). Moreover, on the day of the sale, they pay first and get their light afterwards. Some villagers are a little disappointed when discovering how small it is. An old man, after buying a light, realizes that he is not able to push the switch button: his fingers are too weak.

What a strange sale. The distribution of the lights is organized in such a way that the prices are completely disconnected from the qualities of the light[203]. The decision whether to purchase the light are not based on a reflection about the adequacy of the price relatively to the qualities of the light, but on the adequacy of the prices relatively to the villagers' willingness to pay. Of course, it makes sense for the experimenters to avoid stressing the connection between the price and the object itself: it becomes absurd when eight different prices are circulating for an identical object. But this suggests something more important: what if the villagers did not buy lights, but prices? Until the end of the transaction, prices are more materialized and more tangible than the lights. Written on the vouchers, materialized by the vouchers, written on boxes, organizing the disposition of the lights in the cardboards and on the table, the prices are made very visible. Prices, and not lights are discussed, examined and pondered by the villagers. The action of making a payment takes the center of the stage, whereas the activity of purchasing a particular object is almost completely evacuated from the experiment.

[203] Genevieve Teil and Fabian Muniesa describe a series of pricing experiments conducted in a laboratory, in France (2006). The participants were presented with processed food products and asked to price these products. The authors analyze the prices proposed by the subjects of the experiment as being part of a complex and creative process of appreciation of the products. In Teil and Muniesa's example, price is constructed as reflecting the preferences of the subjects regarding the various qualities of the products (e.g. whether they are made of genetically modified corn, their organoleptic qualities). By contrast, in this chapter I show that the pricing experiments conducted by the Research Group 5 carefully organize a disconnection between the price and the process of appreciating the qualities of the light.

3.3.3. Counters 3 and 4: experimental citizenship

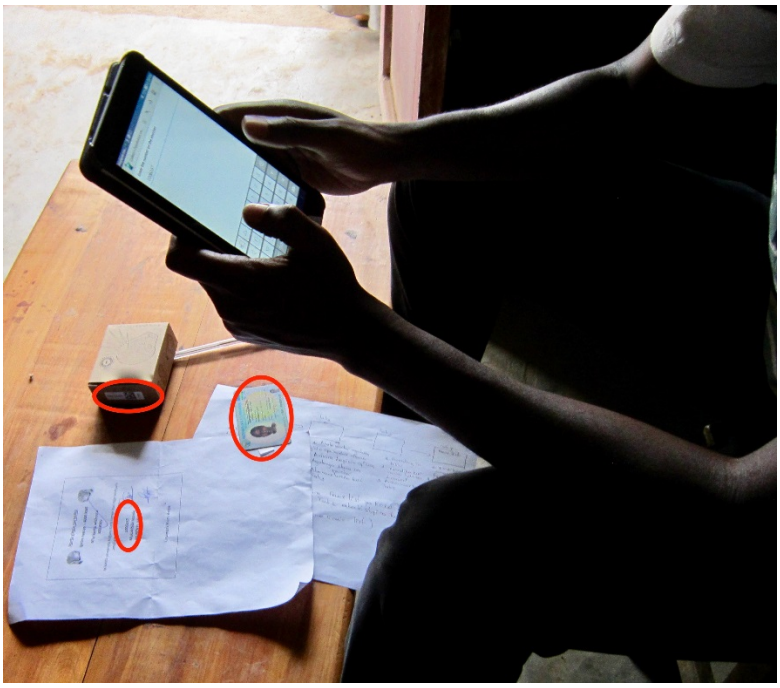

Figure 20: Registering operation, counter 3

The third step involves a very short survey. It is not really data collection, a survey, it is more of a registering operation. Omar and Yvette are equipped with digital tablets. For each person, they enter the number of the voucher, then the name of the villager, his or her national ID card number, and finally, the serial number of the light. It is almost like a ritual: the villager's name is officially tied to three numbers, produced by three different institutions. The state issued the 16-digits ID number, Kianga Energy Ltd. issued the light's number, and finally, Evidence against Poverty generates a seven-digits household unique identifying code (fig. 20). This survey does not really aim at collecting new information, but it has the effect of establishing a strong correspondence between these three numbers, between a household registered by EvaP, a citizen registered by the state and a light produced by Kianga Energy. Under this triple benediction, the villager is finally equipped with a small task light.

Then, on the last counter, Simeon fills the exact same table that Adrian filled on Counter 1 (fig. 19). At this point, the villager has been paired up with a light, and Simeon can fill all the columns of the table, including the serial number written on the light. The action of making a payment is accompanied by the registration of the payer under three numbers, connected to each other at the occasion of the transaction. The action of making a payment initiates a long-term relationship that can be regarded as a low-key subscription. A user, registered as a

country's citizen, as an experiment participant and as a social business's client, receives a single light, which works as a numbered access point to a future flow of energy, conditioned to future micro-payments at the village micro-enterprise.

*

This last section explored the micropolitics of prices, or the "molecular" politics of prices, to borrow to Deleuze and Guattari's work on micropolitics. The experimental prices stimulate a complex array of affects among the villagers and the fieldworkers. These affects can be understood in the strict context of the experiment, but also extrapolated and tentatively interpreted as playing a role in offering the villagers a taste of the kind of development that is proposed to them. Through the experiment, the message conveyed is that making payments is a required ability to gain access to a slightly more modern and comfortable world.

Conclusion

Just before the pricing experiments started, I only knew that these experiments were about randomizing prices. Their details remained mysterious to me. I had heard about them multiple times, but just enough to understand that Marek and Patrick expected them to be the trickiest part of the Kianga Energy Research Project. They shared the experimental protocols Morgan had sent to them with me. The protocols were written very succinctly, seemingly as memos following phone meetings rather than as self-evident documents. This persistent bewilderment about how the pricing experiments would unfold only cleared up after I could observe (and participate in) their material implementation. As when learning a game, it is not after reading the rules but after playing a round or two that one starts to understand how it works. In many regards, the pricing experiments can be thought of as games: they are sophisticated lotteries and they produce some excitement, some disappointment and generally a collective effervescence. They produce winners and losers, and people can get carried away.

To illustrate the way experimental prices operate, I use the notion of {price}-world. My contention is that those experimental prices do not just circulate in the villages, they temporarily transform the space of the villages and the way people interact with each other. The agency of the experimental prices is strong: they influence people's affects and actions in surprising ways. Meanwhile, the object for sale, the Kianga light, is almost completely evacuated.

Through the description of how the pricing experiments actually unfold, this chapter aimed at stressing details which suggest that the concept of demand is problematized in a very particular way. Demand is not envisioned as resulting from pondering the adequacy of a price for a given good or service. The importance of price is hypertrophied, at the expense of the lights for sale. Beyond the villagers' willingness to pay for a solar light, it seems that what is put to the test in the voucher experiment is their ability to behave as payers in general. This insight will be further discussed in the next chapter, focusing on the marketization of poverty interventions.

> The Sesotho round houses seemed to me, in the language of the times, an "appropriate technology." The "European" rectangular houses, in contrast, were (thanks to their metal roofs) hot in the summer and cold in the winter. They were also unnecessarily expensive, requiring imported materials, and conspicuously ugly. I made the case to Mr. Lebona in just these terms. Why did he want to build a rectangular "European" house, when the "local", Sesotho traditional house had all these virtues? Mr. Lebona looked amused. His response, which came quickly and forcefully, gave me pause, and still does. Looking me carefully in the eye, he asked, "What kind of house does your father have, there in America?" (I was at the time young enough to be regarded as a mere "student", so the use of my father as the point of comparison was logical). "Is it round?" No, I confessed; it was rectangular. "Does it have a grass roof?" No, it did not. "Does it have cattle dung for a floor?" No. And then: "How many rooms does your father's house have?" Here, I had to stop and think—which Mr. Lebona appeared to find amazing, as rectangular houses in his experience had either two or three rooms. Finally, I mumbled, "About ten, I think." After pausing to let this sink in, he said only: "That is the direction we would like to move in." (Ferguson, 2006, p. 18)

Chapter 5: Humanitarian artefacts: Outfitting the Global Poor

Introduction

Whereas the previous chapter discussed the Kianga Energy Research Project as a complex RCT, the present chapter shifts the focus towards the nature of the intervention evaluated through the RCT. What is this intervention, how is it implemented, and how does it contribute to define poverty and poverty action? How is a figure of the global poor shaped through this intervention? The intervention consists in the distribution of small, low-cost solar LED lights, offered for sale at a below-market price to off-grid rural dwellers. These lights are sold without any individual charging system, but they are linked with a village-based pay recharging station, operated by four villagers made into "micro-entrepreneurs". In several ways, the solar lighting device, and the micro-franchise system through which it is commercialized, are characteristic

of the contemporary transformations of international aid and poverty action. First, it is a product of what anthropologists sometimes call "humanitarian design" (Johnson, 2011 ; Redfield, 2016), referring to the design of objects created and distributed to "do good" and help populations in need. Second, the Kianga solar lights are distributed by a for-profit, Kianga Energy Ltd., which has been searching for an economic model and pricing scheme that would allow to profitably cater for poor off-grid consumers exclusively, an endeavor that corresponds to the ambition of "doing well while doing good" (Collier et al., 2017).

In this last chapter, I am still pursuing the project of qualifying the micropolitics of poverty, but I shift the focus from the experiment to the technical artefacts distributed during the experiments. Taking inspiration from the literature exploring the politics of infrastructure, I try to analyze the Kianga solar LED lights as a light-weight, micro-infrastructure alternative to the extension of the grid.

> "If, as much scholarship has suggested, infrastructures are not simply neutral conduits but instead central to the constitution of modernity in a diversity of ways […] an ethnographic approach to this politics of infrastructure, I suggest, similarly opens up conceptual and methodological space for an exploration of forms of the political that take shape outside its conventional locations and mediations." (Von Schnitzler, 2016, p. 9)

I seek to qualify the micropolitics of poverty at play in the interventions aiming at offering micro-infrastructures as minimalist responses to the ailments of poverty. These interventions produce fragmentation and create technological zones, within which micro-infrastructure unfurls with a normative force (Barry, 2006).

The **first section** discusses humanitarian design, based on the case of the Kianga solar system and other case studies from the literature in anthropology. How does humanitarian design problematize poverty action? I argue that humanitarian design, while expressing a distant form of care, also tends to entrench a separation between poor spaces and their outside. The **second section** reflects on the marketization of humanitarian artefacts, and on its role in defining poverty reduction strategies. The **third section** discusses the key role played by prices in the marketization of humanitarian artefacts. Pricing humanitarian artefacts is a delicate operation, the failure of which can discredit a project or compromise its success.

Section 1. Humanitarian design, othering design?

A recent shift in critical anthropology has consisted in studying humanitarianism through the prism of the material artefacts that are brought to alleviate the sufferings of the distressed populations to be helped. The LifeStraw is a personal plastic straw that filters dirty water as the user sucks through it (Redfield, 2012, 2016). The Plumpy'Nut® is a single-serve ration of ready-to-use enriched food for the treatment of infantile acute malnutrition (Redfield, 2012 ; Scott-Smith, 2016). The PeePoo bag is a single use biodegradable plastic bag, turning human waste into fertilizer within four weeks (Redfield, 2018 ; Redfield and Robins, 2016 ; Scott-Smith, 2016). Finally, the solar LED lights distributed by various companies have become an iconic object both in development and humanitarian crises contexts (Cross, 2013, 2019). Anthropologist Tom Scott-Smith explains this renewed interest for material artefacts as an attempt at resolving the hiatus between the crucial role of material things in situations of humanitarian crises and their elusive treatment in the scholarly literature.

> "Humanitarian action is often defined as the relief of suffering by providing essentials such as food, healthcare, shelter and water, but this requires a host of related objects: jerry cans and pumps to deliver the water, poles and tarpaulin to build the shelter, sacks and warehouses to store the food, to say nothing of the foodstuffs, the shelter and the water themselves. […] Discussions of humanitarianism tend to focus on moral principles, institutional politics, global coordination and political economy. There is a vibrant critique of relief work at the institutional level, and a growing body of work on the historical manifestations of aid. In general, however, scholarly work tends not to analyse the material detail of humanitarianism: the question of what is provided in disaster, how, why, and with which effects." (Scott-Smith, 2013, p. 914)

In this dissertation, I have sought to develop an approach similar to the one Scott-Smith preconizes, by focusing on the situated material implementation of a particular RCT as much as on RCTs as an evidence production mechanism. This last chapter focuses on the objects distributed by Kianga Energy Ltd. in the villages of the experimental site.

A concern might arise: how are ongoing debates in the literature on humanitarian action relevant with regard to the empirical object of the dissertation? Indeed, the Kianga Energy Research Project is described by its protagonists as a development or poverty-reduction intervention, not as humanitarian action. Moreover, humanitarian action and development are traditionally regarded as separate categories. While humanitarian action refers to emergency relief provided to populations faced with crises and extreme situations (e.g. disasters, conflicts)

on the ground of ethical principles, development refers to longer-term endeavors, aiming at achieving socio-economic improvements in poor or emerging countries.

In this chapter, I follow the authors who analyze humanitarian action and development jointly, placing them on a continuum rather that insisting on the dichotomy between the two. Both can be regarded as forms of international aid, geared at alleviating suffering and improving the living conditions of the poorest and most vulnerable populations in the world. A joint analysis makes all the more sense than a recent shift has been taking place within both forms of "distant care": the proliferation of "little development devices and humanitarian goods", supposed to remedy the ailments related to extreme poverty or crises (Collier et al., 2017). These devices, products of humanitarian design, share some characteristics: they are often small, light-weight, portable and inexpensive. They are targeted at individuals, families or small communities, but rarely at larger units of population. They are often enthusiastically deemed "innovative." They sometimes rely on telecommunication technologies, such as mobile phone and mobile money networks. They are designed to function in places with poor infrastructure. Often, they are distributed as commodities rather than gifts, or at least they blur the lines between these two categories. Solar lights, for instance, may be handed out for free in refugee camps or as part of disaster relief kits (Cross, 2018), or sold below market price to off-grid customers. Another reason to consider humanitarian relief and development activities jointly is to be found in the contemporary evolutions of development projects. The World Bank for example has been shifting away from its previous goals of fostering economic growth in developing countries, and has instead been focusing its efforts on alleviating extreme poverty since the 1990s (Roy, 2016). More generally, the forms of intervention seem to be geared at fostering human lives rather than building and transforming institutions (social welfare, national economy). In both cases, it is the human status of people rather than their citizenship to a particular country that is the basis for assistance.

Hence, drawing on the case Kianga Energy Ltd.'s solar LED lights as well as on other case studies featuring objects used either in humanitarian or development projects, this section questions the proliferation of such little devices and the role they play in defining poverty and configuring poverty action. Typically, little development devices and humanitarian artefacts do just that: they redefine both the goals to be attained and the series of obstacles to be overcome.

1.1. The Kianga Energy solar light and charging system

The operations of Kianga Energy Ltd. are interesting not only because of the entanglement of the company's business with the RCT run by the Research Group 5, but also because Kianga is a successful social business. It was seed-funded by the World Bank, and awarded multiple prestigious grants afterwards. Soon after its creation, the company struck a deal with a large commercial bank and sold carbon emission credits for several millions of dollars. Kareem, Kianga's CEO, has given multiple interviews in the press, including the online version of the New York Times. So, Kianga Energy Ltd. seems to be fulfilling the expectation of many actors regarding what is a successful social business. Unfortunately, my attempts at reaching out to Kianga Energy Ltd. were not fruitful and I could not obtain a formal, recorded interview with anyone from the company. The information I have on Kianga Energy Ltd. is thus a little patchy. But after completing the baseline survey (recounted in chapter 2), the fieldworkers returned to some of the villages assigned to the treatment group to implement pricing experiments (described in chapter 4). Often, Kianga Energy Ltd.'s staff would take advantage of these post-randomization trips to deliver the charging equipment in the villages and train the micro-entrepreneurs. On one of these occasions, I met Musaza, Kianga Energy Ltd.'s country director. He was riding in the car with Lorie's team, the team I spent the most time with. One day, instead of observing Lorie's team preparing for the "voucher" experiments, I followed Musaza on a nearby stretch of grass as he unpacked the charging equipment. He is a tall, affable middle-aged man, displaying all the signs of respectability: the formal suit and polished shoes, the gold wedding ring, the pocket-size bible and the discreet potbelly. As he was unpacking the objects he had brought, he started showcasing them to me.

Musaza first showed me a Kianga LED light, taking it out of its small cardboard box. It is a small task lamp cased in blue plastic, holding in the hand. It is equipped with an elastic band, that enables the user to wear the light as a headlamp, to wear it around her/his neck, or to hang it. It looks like a clunkier version of the headlamp I brought with me from France, remembering the occasional power cuts and poor street lighting of the capital city from a previous stay. Musaza explained how the design of the light had evolved to incorporate the users' feedback. The founders of Kianga Energy Ltd. report in various press articles to have spent 14 months designing the lights, funded by seed money from the World Bank, among which two months of immersion in a rural area of the country, so as to understand the need of the future users. Musaza recalls for example that the switch used to be a multi-position switch, but the villagers, he said, would dirty the switch with sweat and cooking oil. Clogged, the mechanism would soon break.

I was at first a little startled by his description of the users, but there was no mischievousness in his voice – after all, the light is supposed to be used while cooking or working, while getting one's hands dirty indeed. The switch was replaced with a pushbutton, supposed to be more forgiving of the users' greasy hands. He also explained that there used to be three different levels of luminosity, which was "too confusing" for the villagers. The latest model has only two different levels of luminosity. The changes made to the device made it sturdier and simpler, in response to the designers' understanding of the users' needs. What did the villagers think of the Kianga LED light? I could only gather second-hand information on this question. Marek (the field manager at Evidence against Poverty) told me that the villagers often expressed disappointment when they first saw the lights and realized how small the lights were[204]. The small size of the lamps was also listed among the reasons why some villages refused to take part in the experiment. Admitting that the lamps were small indeed, Marek added that he had been pleasantly surprised with their strong luminosity and by the breadth of the light beam.

The Kianga lights are presented (on Kianga's website, on the various press articles published about Kianga and by the Research Group 5) as a significantly improved access to lighting in off-grid areas. But how much of an improvement does it feel for the villagers when they first discover a LED light that is no bigger than the disposable-battery-powered flashlights they were already using? The small size of the lights can also be regarded to make for a small, even meaningless impact. Anthropologist Jamie Cross, interviewing bureaucrats and entrepreneurs involved in the development of solar energy in India, reports their dismay towards the small solar lanterns distributed by Chinese or American manufacturers, calling them "toys" or "garbage" (Cross, 2018). While their irritation was partly related to the allegedly low quality of the lights, it was also questioning the transformative potential of such small objects. Were these tiny lights to make any change in the lives of the poorest?

How does the Kianga LED light respond to these concerns? As described later on in this chapter, the lights sold by Kianga have to meet some quality requirements and are quality certified. They are also sold with a one-year guarantee. Musaza explained to the villagers the

[204] The users' preference for larger appliances was also reported by the CEO of a social business selling home solar systems in Central America. This is very different from what Kianga Energy Ltd. offers: each house is equipped with its own panel. The most basic system can power several light bulbs and cellphone chargers, whereas the most powerful systems can power larger appliances, such as a TV or a refrigerator. She was surprised when she discovered that off-grid customers tended to buy the larger systems available, leading the company to offer larger and larger solar systems. Source: phone interview, March 2016. This interview was part of a small campaign of interviews led by the Research Group 5 with other NGOs or companies distributing solar products in off-grid areas.

conditions of the guarantee: the light will be replaced if there is a defect, but not if it has been damaged as a result of the user's neglect. He took the example of a light that melts because it is left too close to the fire, and pantomimed a light that drops on the ground and breaks. He also explained that any reparation will take place in the closest town connected to the grid, where technicians can power their tools. Ironically, by saying that, he shed light on the fact that bringing one solar panel and a hundred LED lights in a village does not make that village electrified. Nothing bigger than a led or a cellphone can be powered by the solar system distributed by Kianga Energy Ltd.

The question of the improvement brought by the solar lights is obviously linked to the question of what the villagers were using before. As other companies selling solar products in developing countries (Cross, 2013), Kianga Energy especially emphasizes kerosene lamps as the "dirty" alternative to eradicate. Kerosene is described as expensive, representing a large share of poor households' income. It increases fire hazard, sometimes leading to serious skin burns – Kareem, Kianga's CEO, describes in an interview his encounter with a young child who had been badly burnt and disfigured after a kerosene lantern fell and set his mattress on fire. It is also noxious for people's respiratory health. Finally, it contributes to climate change, by releasing greenhouse gas in the atmosphere.

I will discuss later on how various actors have promoted the qualities associated to the solar lights, especially in the relation to the damages created by kerosene. But interestingly, while this narrative about kerosene displacement is still very present – including in the Research Group 5's final report – it seems that kerosene has indeed been displaced over the past few years. Kianga Energy Ltd., on the "frequently asked questions" page of its website, acknowledges that the use of kerosene is declining in off-grid areas, where people have more and more access to flashlights. This gradual replacement of kerosene and candles by cheap LED flashlights, mostly manufactured in China, is not unique to the area where Kianga operates but to be observed in rural Africa at large (Bensch, Peters and Sievert, 2017). Whereas the flashlights made in China do not share the hazardous and noxious attributes of kerosene lanterns, they are still regarded as unsustainable. They are often low quality and they are powered with disposable dry-cell batteries, that end up polluting the environment. In this new configuration, where solar lights come in replacement of LED flashlight instead of kerosene lanterns, the main improvement is no longer linked to use, but to cleanliness and sustainability – and even that claim is now being challenged, as scholars have inquired into the afterlives of off-grid solar energy devices in Africa (Cross and Murray, 2018). In both the cases of kerosene

lanterns and dry-cell battery powered flashlights, the energy practices of the poorest are problematized as polluting, either through carbon emissions or landfilling. This "inadvertently (and very subtly) transfers the world's most serious problems into the private lives of the most vulnerable", as sociologists working on the distribution of improved stoves warn (Abdelnour and Saeed, 2014).

The light that Musaza showed to me is locked to the charging system distributed by Kianga: the only way to charge its battery is to plug it into the SpiderCharger™, with a non-standard connection. This is meant to protect the micro-entrepreneurs' business[205]. As the villagers arrived and gathered around us, Musaza welcomed them warmly. He is taller and bigger than most people in the village, and seemed to catch a lot of attention. He then showed me the three objects that compose the equipment: the Kianga Solar Panel™, the SpiderCharger™, and the SuperDynamo™. The solar panel is a rectangular sheet of blue photovoltaic cells, about one meter long and 50 cm large. It is framed in aluminum. It is not meant to be fixed on a roof: micro-entrepreneurs can expose it to the sun (on the ground, against a wall) when they need to and then put it away. A three-meter long cable enables connecting it to the SpiderCharger™. It is supposed to be the main power source for charging the battery, and the SuperDynamo™ is meant to be used as a back-up power source on rainy days. One of the micro-entrepreneurs interviewed by the Research Group 5 said that she found the solar panel very heavy[206]. Moreover, the solar panel was damaged and had not been replaced at the time of the interview[207].

The SpiderCharger™ is a portative battery, cased in blue plastic. A round handle on its top makes it look like a little toy suitcase. On one side two docking ports enable the connection with the Kianga Solar Panel™ and to the SuperDynamo™. On the other side, up to five lights can be plugged and charged at the same time. On the face of the box, there is a numeric pad, and two sets of light indicators. Apart from logos and numbers, there is no written inscription on the SpiderCharger™, only pictograms. Musaza called my attention to a little yellow logo printed on the box: it is the logo of a large cell phone company that offers a mobile money

[205] Another model of LED light distributed by Kianga is open: its battery can also be charged through a USB connection and through a standard AC connection. Once the light's battery is charged, it can be used in turn to charge a cell phone: the light is sold with a mobile phone charging cable.

[206] The interview was conducted after my fieldtrip; it is published on Womenergy's website.

[207] In their final report, the Research Group 5 mentions a period when Kianga Energy Ltd., in between grants, faced cash-flow difficulties. As a result, the enterprise laid off many employees, and was not able to provide after-sale services for some time.

service. Musaza explained that a full battery will not charge the lanterns unless the entrepreneurs have first purchased credit from Kianga Energy Ltd.'s through this mobile money system. Then, he turned to the SuperDynamo™, a pedal generator, also cased in blue plastic and mounted on a rudimentary, unfinished wooden structure. The generator is fixed at the extremity of a reclined chair, made of cheap timber, on which the entrepreneur can take place, finding her or himself in position to pedal. As Musaza invited me to do so, I sat on the wooden reclined chair. I found the chair rather narrow, but stable and comfortable enough. I started to pedal the dynamo and immediately, the machine beeped and a red LED lit up. "Common mistake!" Musaza warned me. One should not start pedal the dynamo until it is connected to the SpiderCharger™, otherwise there is a risk of damaging the dynamo. Musaza then connected the SuperDynamo™ to the SpiderCharger™ and asked me to pedal very slowly. A little crowd had gathered and watched me pedaling the dynamo – Musaza did not underestimate the entertaining potential of the scene. As I slowly pedaled the generator, he pointed at the SpiderCharger™: a yellow LED had lit up, next to a little stylized round face whose mouth is figured by a horizontal line. The grumpy face indicated that I was not pedaling fast enough: the battery was not charging. As I realized later on that day, Musaza was walking me, very pedagogically, through the exact same steps that he would later explain to the micro-entrepreneurs, in a different language. I started pedaling faster, and a little green LED lit up, next to a round and happy smiley face. It means that the battery is charging, Musaza explained. I pedaled a little faster, and a different green LED lights up, next to an even more cheerful face: the battery was charging at maximum capacity. Finally, Musaza encouraged me to pedal even faster, as fast I could. A shrieking noise rang, and a red LED light lit up, next to a face whose mouth drops on both extremities, figuring an unhappy character. "Someone has pinched this baby!" Musaza joked. If one pedals too fast, there is a risk of frying the circuit. Musaza is pedagogue and affable, was catching the attention of the villagers easily and managed to make the training an entertaining moment.

Later on, Musaza (unsuccessfully) tried to disperse the crowd so as to have a quiet and focused moment with the four newly made micro-entrepreneurs. The micro-entrepreneurs, two men and two women, sat on a wooden bench, listening quietly. Standing in front of them, Musaza repeated the same steps he had shown to me before, in the language of the country. A lot of villagers continued to watch, standing behind the four micro-entrepreneurs. Musaza kept the same pedagogical style, making the micro-entrepreneurs repeating after him, trying to make them laugh. He demonstrated how to connect the lights to the battery. He also showed a cable

with a standard connector, allowing to plug most cellphones available on the market. Then, Musaza gently shook the SpiderCharger™, provoking a soft rattle. He approached his ear to the box. "What is that? beans?" he asked playfully, before opening a trap located on the rear side of the SpiderCharger™. Inside, a dozen of different cables with different connectors should allow the entrepreneurs to charge virtually any cellphone.

The remainder of the training Musaza provided to the micro-entrepreneurs shed light on another feature of the Kianga Energy system. Photovoltaic cells and LED lights might no longer strike as being very innovative, however the Kianga system is technology-intensive in yet another way. Musaza explained how to buy airtime from Kianga Energy Ltd., using the mobile money system built in the battery. He sent some money to the phone number tied with Kianga Energy Ltd.'s mobile money account, and received immediately after a code on his phone by text message. Using the numeric pad, he typed in the code, and the small screen displayed the available airtime. Musaza said that at least one of the four micro-entrepreneurs had to go over to a nearby village to open a mobile money account, so that the group could use the Spider Charger™. The system is remotely locked: the company can remotely collect payment from the micro-entrepreneurs and remotely enable them to unlock the device. In the same time, the company can remotely capture data about how many lights and cellphones are charged and when. The information capture and tele-transmission accomplished by the device play down the importance of the micro-entrepreneurs' role and skills. Later on, after watching the whole training, I asked Marek whether the micro-entrepreneurs would get a bookkeeping training as well. Looking very surprised, he said that that was unnecessary, because the machine automatically transmitted all the information to Kianga Energy Ltd. Such use of the technology, which enables to reach remote places without travelling to those places on a regular basis, is not unique to Kianga (Scott-Smith, 2016). This sheds light on the fact that while Kianga's lights are designed for off-grid areas, the system nonetheless needs other reliable infrastructures to thrive: micro-entrepreneurs equipped with cellphones, phone network coverage, access to a point of sale of the cellphone company.

Kianga's business model had been criticized by Womenergy in the light of another model, which was popular among companies selling solar products on bottom of the pyramid markets. Some companies offer a complete solar home system, each household getting its own solar panel, powering several light bulbs, a radio, sometimes a TV set, etc. The home systems are equipped with a remote-locking mechanism: customers have to pay weekly installments to unlock the device. After a certain number of weeks (it may take up to three years), and if they

do not fail to do regular payments, they become full-fledged owners of their home system, which is then permanently unlocked. Customers can use their system until it breaks, until they are connected to the grid, or, under the right conditions (e.g. maintenance and continued customer service), for good. In cases when people fail to pay, the company comes and takes the system back. This is called a "lease-to-own" or "rent-to-own" business model. This system is described as being successful in East Africa and donors very much like it, according to Womenergy. Indeed, these rent-to-own systems eventually provide people with a quite powerful and diversified access to energy that they can use free of charge. Kianga's model, in which each household gets a single lantern and has to keep paying battery charging fees to use it, pales in comparison[208].

1.2. Minimalist devices to remedy complex ailments?

Anthropologist Peter Redfield reflects on two metaphors that are routinely used to criticize small-scale, targeted humanitarian interventions based on little technological devices: the metaphor of the band-aid and the metaphor of the silver bullet (Redfield, 2018). He does so by taking the metaphor seriously and describing these two artefacts. On the one hand, band-aids are small, sterile, self-contained solutions enabling individuals to self-treat minor cuts and abrasions. On the other hand, if applied on a deeper wound, they might merely hide it and allow it to get worse, by obscuring the need for a more serious intervention. The issue is the adequacy between the quick and easy solution of the band-aid, and the nature and seriousness of the wound to treat.

The author details the different possible meanings of the use of band-aid as a metaphor to dismiss such projects. First, they might divert the attention from the real problems, by providing a false sense of security. They might also produce a framing effect that leads to mistake a mere symptom for a problem that is more complex and that extends beyond the wound. This is typically the case in the "rape-stove panacea", a simplistic narrative that creates a causal link between the type of stove used by a woman and her risk of being sexually assaulted (Abdelnour and Saeed, 2014). Improved stoves burn with less wood, and allow women to spend less time in the woods.

> "We suggest that the 'stoves reduce rape' rhetoric results in a subtle yet profound shift in humanitarian activity: the struggle to understand and prevent sexual violence is

[208] The fee is supposed to decrease after the micro-entrepreneurs are done paying for the charging equipment to Kianga Energy Ltd.

> replaced by the quest to design, produce, promote, and deliver the most fuel-efficient stoves." (Abdelnour and Saeed, 2014, pp. 146–147)

Emphasizing firewood collection as a risky situation, at the expense of all the other situations in which sexual assault might occur, the improved stoves promoters miss the point. Moreover, their framing overemphasizes the behavior of the potential victims of assault (the time spent outside of their home), while leaving the behavior of the potential attackers unattended. Second, whenever there is a more comprehensive solution available, band-aid conveys a sense of neglect and cynical calculation: whereas something better could be done, only band-aids are provided because they are cheaper and easier to implement. The Kianga Energy Research Project, for example, could be regarded as an unsatisfying alternative to the connection to the grid, or even to larger, more powerful home solar systems. At one occasion, one man from a village where the Kianga Energy research project was being rolled out asked if the distribution of the solar lights would delay the arrival of the national electricity company, making clear that the solar lights, in his view, could not be anything better than a temporary solution.

The other metaphor analyzed by Redfield is the magic bullet or silver bullet metaphor. It draws on old European folklore stories, in which firing silver bullet at a werewolf is the only way to kill it. In this case, the image suggests efficient, surgical action, very targeted and clean. It is very suited to describe the cases when one technical artefact is promoted as a solution: for example, when improved stoves are said to reduce rape and LED lights to provide access to clean energy. These framings shift the emphasis from complex issues to a simple technical puzzle to solve.

> "They also have refocused the question of whether a low-cost solar lamp is an appropriate solution to energy poverty, infrastructural failure, and climate change to the question of whether individual solar lamp products meet minimum standards." (Cross, 2018)

Paradoxically, the author notes, this narrow targeting (associating one specific solution to one specific issue) is also a path to universalism. Indeed, the flipside of the strong causal connection between the efficacy of the silver bullet and the nature of the monster is that a silver bullet will kill any werewolf, anywhere in the world: devices such as improved stoves and solar lights have become the objects of global initiatives. Whereas the band-aid metaphor describes a minimalist ambition, the silver bullet metaphor describes a minimalist framing of complex issues.

Let us consider the Kianga Energy Research Project in the light of Redfield's reflections. On the one hand, it is a minimal intervention. The villagers may purchase a small but brighter task-

light that is less polluting and supposedly better-quality than Chinese flashlights. They can recharge the light's battery at the village charging station, which is cheaper that buying kerosene according to both Kianga and the Research Group 5 – however, neither organization compares the price of a recharge with the price of dry-cell batteries. But this small intervention is credited with the potential to achieve big change, mostly by two channels. The first one is linked to displacing kerosene: no longer inhaling fumes, the users are supposed to enjoy better health. The second one is related to the possibility to work longer hours, the Kianga light being bright enough to allow for productive activities at night. The children especially are expected to enjoy this new lighting source to do their homework after sunset. Both channels can be traced back to human capital theory (Becker, 1964). People in better health and better education are more productive. In Becker's terms, investing in health and education is equivalent to accumulating human capital, which is an important factor for productivity. Human capital theory is at the heart of development economics as it is done by RCT-proponents[209]: the idea is to enable the poor's capacity to become more productive, to quick-start them into a path of growth. This type of causal reasoning is based on a framing in which poverty is a problem of production and productivity: the poor do not produce enough value. Another possible framing, which is more relational, consists in understanding poverty as a problem of distribution rather than production (Ferguson, 2015). Little development devices, by design, tend to operate on a small scale, and thus to enhance un-relational framings of poverty.

1.3. Micro-infrastructures and dignity

Peter Redfield describes little objects distributed in poor settings, among which the LifeStraw, a personal straw equipped with a filter, which enables the user to drink directly from a contaminated source, and the PeePoo bag, a biodegradable plastic bag that safely contains human waste (Redfield, 2012). Drawing on Michel Foucault's work, Redfield describes such objects as "life technologies." Foucault describes a shift when the power of the state is no longer characterized by its ability to kill but by its ability to foster healthy and productive life (Foucault, 2004a). According to Redfield, the proliferation of little humanitarian devices is the ethical, humanitarian response to the belief that some states cannot fulfill the "bioexpectation" that they will successfully foster the life of their citizens.

[209] The concept of human capital is for example cited in an article discussing the long-term impact of deworming school age children on their future earning (Baird et al., 2015). This article is a follow-up to the famous deworming experiment (Miguel and Kremer, 2004).

> "In their very design, these objects reflect doubts about state capacity to safeguard populations. Rather, they are distinctly humanitarian goods, presenting themselves as an ethical response to failure on the part of states — and sometimes of markets and forms of civil society as well." (Redfield, 2012, p. 158)

In relation to the failed state narrative, the little life technologies described by Redfield are sometimes interpreted as a light-weight micro-infrastructure, "divorced from any project of extending a grid of urban services" (Redfield, 2016, p. 173). The Kianga system is indeed described both by Kianga and by the Research Group 5 as participating in the national electrification effort, by reaching the places that will likely not be reached by the grid.

Pursuing the inquiry in terms of the space defined by such objects and the relationality they contribute to make and unmake, one question arises. Do the minimalist micro-infrastructures provided to the poor question or challenge the networked infrastructure that is enjoyed by the global middle-class? In an article about sanitation (Redfield and Robins, 2016), the authors quote a speech from the president of the Global Development Programme of the Bill and Melinda Gates Foundation, delivered in 2011. The speaker calls for reinventing the toilet, arguing that flushed toilets are no longer sustainable and too expensive for much of the world. But she makes clear in her speech that the reinvention does not involve the replacement of the sewage system in the developed parts of the world, but for new solutions, which often require a more direct and intense engagement with the materiality of human waste, in the parts of the world where there are no flush toilets yet. So, it is not the Western technology of flush toilets that is challenged, but its extension to new parts of the world. What is the reinvented toilet, and how do is users respond to it? Peter Redfield and Steven Robins contrast two framings of sanitation, in the context of post-apartheid South Africa. One approach consists in focusing on the material properties of waste: neutralizing the pathogens that are contained in it, avoiding contamination and in some cases even valorizing the waste by turning it into fertilizer. In that case, the issue of human waste is framed as a purely technical matter. This framing has failed in South African townships, resulting in protests and renewed claims to access to proper toilets. In the absence of sewage, many township dwellers use a portative toilet, basically a plastic container that needs to be emptied on a regular basis. These portative toilets fulfill the minimal expectations of avoiding the disposal of human waste in the streets, preventing contamination. The other approach emphasizes dignity. The history of South Africa, however, is such that anything less than a properly enclosed, porcelain water-flushed toilet is regarded as an infringement on people's dignity and as a blatant sign of inequality. White middle-class

dwellers, not far away, enjoy the comfort of modern toilets: the comparison is inescapable[210]. Sanitation is entwined with social expectations in an assemblage termed "the grid of modern life" (Redfield and Robins, 2016, p. 150). Anthropologist Antina von Schnitzler offers another analysis of the struggles that occurred around the issue of water and sanitation in South African townships (2016). Township residents opposed the installation of water meters in their houses. More specifically, they contested the calculation of the quantity of water they were allowed to use for free, a quantity supposed to cover their basic needs. To the technocratic and minimalist calculus, they opposed their dignity: they wanted to have enough free water to clean their homes, flush the toilet, etc.

1.4. Disappointing design?

The scholarly literature is often written in criticism of the little artefacts designed for the poor. In the best cases, the authors are nuanced. Since the Zimbabwe Bush Pump, it seems that few objects have been found "easy to love" by scholars (de Laet and Mol, 2000, p. 252). The Zimbabwe Bush Pump is a locally engineered and produced hand pump that extracts ground water. It is a robust and "forgiving" pump, very easy to fix with spare parts available in local markets. Each community gets to decide where to install it, often after a consultation with the water diviner. Properly topped with concrete headworks to prevent spilled water to contaminate the well, and properly cased, the pump produces cleaner water. The count of Escherichia Coli is lower than in water pumped with other pump models. Despite its unique qualities, the pump is not protected by a patent: its inventor insists that it should remain in the public domain. It is distributed in collaboration with the Zimbabwean administration. Anthropologist Peter Redfield, reflecting about de Laet and Mol's article, suggests that the lovable nature of the pump is linked with a "post-colonial romance" of nation-building (Redfield, 2016). He offers a possible explanation for the lack of love inspired by more recent humanitarian artefacts, despite the good intentions of their designers. Whereas the Zimbabwe Bush Pump is described as contributing to nation building in an economically disinterested way, the more recent humanitarian artefacts tend to be proprietary, and to bet on state failure, upsetting anti-colonial feelings. Pushing the argument further, political scientist Cedric Johnson not only claims that humanitarian design undermines the state, but also "often performs the grassroots ideological work of neoliberalism by promoting market values and autoregulation among poor

[210] As the authors note, the case of South Africa is particular, because its demographics and political history have created something like a zone of contact between "norms of the global North and South".

constituencies" (Johnson, 2011, p. 448). According to Johnson, humanitarian design is often based on an analysis of poverty that is very compatible with a neoliberal vision. Moreover, by producing quick fixes with "micro-social" technologies, humanitarian design contributes to conceal deep structural problems.

Other authors warn against the temptation to depreciate the rise of market-based solutions in the field of poverty alleviation as a mere manifestation of neoliberalism (Elyachar, 2012). They urge scholars to take seriously "the struggle to find a moral compass for the forms of market rule associated with poverty interventions" (Roy, 2012a, p. 105). Offering a different point of view on the question of how humanitarian design reflects on the role of the state, they also call the readers to pay attention to the fact that market-based initiatives raise acute political questions about the desirable future of poor countries: "there are good reasons to distrust corporations and doubt magic bullets. Yet it proves harder to denounce drug development, food provision [and] clean drinking water" (Redfield, 2012, p. 179).

Another possible explanation for the non-subversive, disappointing nature of humanitarian design is brought forward by anthropologist Tom Scott-Smith under the term "neophilia."

> "The term 'neophilia' merges neo (new) and philos (love) to label an obsessive love of novelty. It can be used in a positive as well as a negative sense, describing people who are quick to adapt to new technologies as well as those who have an uncritical desire for the latest gadgets, those who are creative and innovative as well as those who fail to learn from the past. When applied to humanitarianism, I use this term to embrace all these features, but also, as will become clear, to describe an ideology that combines New Left and New Right with techno-utopian fervour. 'Humanitarian neophilia', as suggested in this article, designates a distinctive approach to aid, which combines an optimistic faith in the possibilities of technology with a commitment to the expansion of markets." (Scott-Smith, 2016, p. 2)

For Scott-Smith, the "innovation turn" in humanitarianism dates back to the late 2000s. It finds its roots in the Silicon Valley, where, according to media theorists Richard Barbrook and Andy Cameron "Californian ideology" was developed (Barbrook and Cameron, 2001). The Californian ideology combines ideas from the American New Left (creativity, advocacy for marginalized communities, disregard for authority) and New Right (expansion of markets, individualism). This genealogy verifies in the case of Kianga Energy Ltd.: its CEO, Kareem, used to be an engineer in the Silicon Valley, and he emphasizes his enthusiasm for the potential of technology to help the poor. Fascination for technology channels a lot of funding towards innovative humanitarianism, but Scott-Smith warns against uncritical excitement. One aspect of his criticism pertains to the market-based distribution of many of the innovative humanitarian

devices, which will be discussed later in this chapter. Another important argument consists in challenging the potential of these innovative devices to make a substantial change, or at least, the ability of innovation-enthusiasts to distinguish between real change and "fiddling around the edges", or "tiny improvements wrapped in hyperbole" (2016, pp. 11–12).

The case study about improved stoves mentioned a few pages earlier might shed light on what Scott-Smith means by "fiddling around the edges" (Abdelnour and Saeed, 2014). The authors analyze the growing interest for improved stoves – cooking stoves that reduce exposure to smoke and that require less firewood. First prized for being safer and cleaner cooking devices, the improved stoved were later promoted as an instrument in the struggle against rape and gender-based violence. The authors analyze the genealogy of this argumentative construct, which they term the "rape-stove panacea." Based on the statement that women in a refugee camp are under the risk of being sexually assaulted in many situations, including when they go out to collect firewood, various humanitarian actors started to equate rape with firewood fetching. Avoiding to tackle the problem of sexual violence in refugee camps in a more comprehensive way, they promoted the improved stove as an instrument to reduce the time spent by women out of their home looking for firewood. Thus, they problematized the improved stove as a response to rape. Starting with a complicated problem – how to reduce sexual violence in refugee camps – they end up with a simple solution, in the form of a technical artifact[211].

A last possible way of understanding why humanitarian design tends to disappoint scholars is to be found in STS scholar Bruno Latour's work. What if design in general (and not only humanitarian design) was a non-revolutionary approach to problems in general (and not only to poverty and humanitarian crises)? Latour exhibits five connotations of the word design, all of them supporting the claim that design has gradually come in replacement of revolution (Latour, 2008). However, let us make clear that Latour does not deplore this fact. But the five points about design that he exhibits shed light on the disappointment humanitarian design creates in critical anthropologists. First, he claims that design is an inherently modest endeavor, resorting to the early meaning of "design", when the word was first imported from English

[211] The improved stove, less technology intensive than other humanitarian artefacts, is a good example of "frugal innovation." Frugal innovation is defined as "a new innovation manifestation that aims to bring products, services and systems within the reach of billions of poor and emerging middle-class consumers […]. By dramatically cutting costs while safeguarding user value and technological sophistication, frugal innovation has been hailed as potentially disruptive of innovation processes, business models and even entire economies." (Knorringa et al., 2016)

language to French. At that time, Latour explains, design referred to what was done after an object was engineered, to improve its look. Design had nothing to do with functionality, it merely added a little something to an object that someone else (typically, the engineer) had already created and built. That early use of the word design, according to Latour, suggests that there is nothing "foundational" in design. Second, design is a very cautious activity, attentive to details. The careful attention to details has long been regarded as slowing down the revolutionary march of progress. Third, designed objects are, from the outset, objects for interpretation: the change they may or may not bring is not a matter of fact. Designed things immediately exist as things to be exegeted, as collections of signs to be deciphered. Fourth, design is always redesign: there is something gradual, "remedial" in design; design makes some improvements on something that was already there. Finally, and in relation to the previous point, design necessarily involves an ethical dimension. Material choices are also moral choices, and nothing can be left without justification.

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In line with the general project of the dissertation, this section argues that these humanitarian devices contribute to create a separation between the poor who receive them and the rest of the world. These small humanitarian devices tend to create "technological zones" (Barry, 2006) in the spaces where they are distributed. The concept of technological zone allows describing homogeneity, across the spaces where these humanitarian devices are distributed, as well as separation, between these spaces and their outside. These spaces are neither countries nor national economies. Rather, they are unmappable spaces that have in common to be inhabited by extremely poor people and underequipped in infrastructure, and tended to in similar ways. Little humanitarian devices may be both regarded as life-enhancing devices and instruments of distant care and as othering instruments entrenching the separation between poor spaces and their outsides. In particular, the section questions the proliferation of an array of light-weight technical devices distributed as an alternative to the development of networked infrastructures such as the ones that we have been enjoying in the rich world. In this, I have taken inspiration from the literature on "techno-politics", which has argued that infrastructures can be analyzed as political objects, distributing resources and agency in particular ways, and constituting the locus of political struggles.

Section 2: The marketization of humanitarian artefacts

Scholarly works have commented on the increasing involvement of private, profit-seeking actors in humanitarian and poverty alleviation enterprises. Business management scholars Michael Blowfield and Catherine Dolan propose criteria to distinguish between private companies that merely sell their services to governments or multilateral agencies, as contractors, and private companies that can be qualified as "development agents" in and of themselves (2014). The latter invest their own capital toward development-oriented projects, and are willing to be held accountable for development outcomes. Blowfield and Dolan stress the interpretive work required to reframe poverty as a series of ailments that can be remedied by solutions aligned with private companies' commercial interests. They also warn against uneven development: market-based poverty-reduction projects create a distinction between the economically active and the unproductive poor. They see in the participation of private actors in development project an attempt at proposing the discipline of the market as a transformative experience for the poor. Sociologist Linsey McGoey critically describes the involvement of private organizations in the field of development as a manifestation of "philanthrocapitalism"[212] (2014). She explains how the private sector is usually regarded as better able to innovate and come up with creative solutions to the poor's problems, especially where the states have failed to provide any. McGoey however argues that far from operating in a public policy vacuum, the private organizations that engage in development projects attract tremendous amounts of public money, in the form of grants, loans or subsidies – Kianga Energy Ltd. is a perfect illustration of this dynamics. The entanglement between private actors, public actors and NGOs is referred to as the "humanitarian-corporate complex" (Johnson, 2011).

The idea that business interests can converge with humanitarian goals, or that organizations may "seek to do well (financially) while doing good", as Stephen Collier and colleagues put it (Collier et al., 2017), has been scrutinized and challenged in academic works, and convincingly so. However, some authors have adopted a more nuanced position, by acknowledging the ethical attempts enmeshed with the extension of markets in deprived areas. Few of these market-based interventions are as "easy to love" as the Zimbabwe bush pump fondly described by De Laet and Mol (2000), however, they sometimes uncomfortably point at the need for alternative world-making projects to build a desirable future in poor countries. Authors have

[212] The term was initially coined in a book praising that trend (Bishop and Green, 2008)

resisted the urge to dismiss market-based interventions as cynical manifestations of neoliberalism, arguing that in spite of their profit-seeking purpose, these projects still formulate moral and political visions of the world that are worth analyzing. In their wake, I investigate the "ethicalization of market rule" (Roy, 2012a) at work in a market-based poverty-reduction projects. Peter Redfield builds on Foucault's notion of biopolitics[213]. According to Redfield, the imperative to carry out a biopolitics (that he names "bioexpectation") has extended to non-state actors, especially in contexts of purported state failures (2012). The market-based provision of life-enhancing goods and services is increasingly being assessed against the absence of better alternative, and it has increasingly appealed to philanthropists of the global North.

In this section, I reflect on two possible approaches to market-based responses to poverty problems. The first approach consists in creating markets in which the poorest people on the planet can participate and act as consumers despite their extremely low income. The second approach is more interventionist: it does not only seek to make commodities accessible to the poor, but also to achieve specific social transformations (e.g. reduce carbon emissions) through the sale of these commodities.

2.1. Inclusive capitalism: treating the poor as consumers

In his now well-known book *The Fortune at the bottom of the pyramid*, C. K. Prahalad (2009 [2004]) exhorted multinational corporations to develop innovative products and business models, in order to tap into the huge market formed by the 4 or 5 billion poorest inhabitants of the planet. One of the innovations championed by Prahalad consists, for instance, in packaging products (e.g. shampoo, coffee, biscuits) in single doses, so as to make them affordable to people earning a low and fluctuating income. By turning the poor into consumers, besides making juicy profits, the corporations would contribute to "averting the social decay, political chaos, terrorism, and environmental meltdown that is certain to continue if the gap between rich and poor countries continues to widen." (Hart and Prahalad, 2002). This perspective is based on a moral view of the market (Fourcade and Healy, 2007), in which including the poor in global capitalism flows is qualified as a civilizing and peace-promoting process.

[213] The concept of biopolitics has already appeared in the dissertation. By biopolitics, Foucault means that the modern state is not only supposed to exert its sovereignty over a territory, but also to govern, meaning to foster the biological lives, wellbeing and productivity of the population (Foucault, 2004 [1978]).

2.1.1. Solar products in Africa: a regulated market

In the case of the distribution of solar products in Africa, the extension of markets was hampered by the question of the quality of the lights. For years, fraudulent companies sold faulty products and disappeared without providing any refund, customer service or maintenance. As a result, many people lost confidence in solar products. The situation was analyzed in terms of market failure: the market for solar products was dysfunctional, mostly because of asymmetries of information. Together, the World Bank Group and the International Finance Corporation launched a program called Lighting Africa; its slogan is "catalyzing markets for modern off-grid energy." Lighting Africa performs several missions, including awarding grants to promising businesses, establishing the "Lighting Global Quality Standards"[214] for solar products and issuing certifications. It also publishes market trends reports on a regular basis. The market for solar products is regulated in twelve African countries partnering with the Lighting Africa program. The Kianga solar lantern appears on the list of certified products, and Kianga Energy benefitted from a Lighting Africa starting grant in the late 2000s. Kianga Energy's activities unfold in remote areas, but they are nevertheless shaped by a multitudes of "marketizing agencies" (Çalışkan and Callon, 2010), including several global frameworks, standards or initiatives[215]. For instance, the systems sold by Kianga only achieve "tier-1" energy access, according to the multi-tier framework for measuring energy access, developed by a large consortium of institutional donors, including the World Bank and national aid agencies:

> "[The Multi-tier framework] redefines energy access from the traditional binary count to a multi-dimensional definition as 'the ability to avail energy that is adequate, available when needed, reliable, of good quality, convenient, affordable, legal, healthy and safe for all required energy services'. That is, having an electricity connection does not necessarily mean having access to electricity under the new definition, which also considers other aspects, as for example reliability and affordability. Energy access is measured in the tiered-spectrum, from Tier 0 (no access) to Tier 5 (the highest level of access)."[216]

[214] https://www.lightingafrica.org/

[215] To come back to the discussions presented in section 1, these valuation processes also contribute to the technical framing of complex issues: "These product standards have created new distinctions between models and manufacturers. They also have refocused the question of whether a low-cost solar lamp is an appropriate solution to energy poverty, infrastructural failure, and climate change to the question of whether individual solar lamp products meet minimum standards." (Cross, 2018)

[216] https://www.esmap.org/node/55526

The imperative of producing a cheap object for bottom of the pyramid consumers has forced Kianga Energy Ltd. into particular fabrication choices. The designers created a low-cost lantern and had it manufactured in China. Compared to the elegant solar lanterns from other companies, the Kianga light looks quite clunky. It is nevertheless constrained by strict quality standards.

2.1.2. Do the preferences of poor consumers need to be corrected?

The bottom of the pyramid approach focuses on helping the poor to accede to the status of consumers, regardless of what is sold to them. This position was defended by Bernie, a protagonist I encountered early at the beginning of my fieldwork. Bernie is an experienced development consultant specialized in the energy sector in developing countries. He was being interviewed by Veronica, the Research Group 5's principal investigator; the interview took place as part of an exercise that Womenergy imposed on the Research Group 5[217]. Bernie firmly disapproved of the partnership between the researchers and Kianga Energy Ltd., because he considered the experiment as a way to force one particular business model and one particular device onto the villagers. He objected that competition between different companies was the best way to provide the poor with the goods and services that suit them, and insisted that the poor, as any other consumer, perfectly know what they need. He suggested that the researchers should investigate the preferences of the villagers rather than assuming that Kianga Energy Ltd. was the best fit for them. In other words, for Bernie, treating the poor as full-fledged, rational, utility-maximizing consumers is the best way to satisfy their needs. Part of his work had consisted in conceiving and monitoring devices to correct market failures and enhance the importation of solar energy products in Africa. Ensuring the smooth functioning of markets and fair competition was the extent to which Bernie accepted to interfere. During the whole conversation, he deliberately refrained from expressing his own opinions about what the poor should do, value or consume. For instance, he dodged all the questions Veronica asked him about gender inclusion in clean energy businesses. He only consented to say that, if the main users of energy products were women, then yes of course smart entrepreneurs should target their advertising at women if they wanted to make money. So, in Bernie's views – classic liberal

[217] This interview campaign is discussed in chapter 3. As a reminder, Womenergy worried that the findings of the Research Group 5 would be too specific to Kianga Energy Ltd.'s business model, and thus not applicable to other businesses or NGOs operating in the clean energy sector. Unconvinced by the representativeness of Kianga's business model, Womenergy provided Veronica with a list of contacts to interview, so that she and her team could get a better understanding of the market for clean energy products in poor countries. Bernie was one of these contacts.

views – providing the poor with free markets is enough, and there is no need to intervene further by defining specific paths for social change, or by promoting specific values.

2.2. Selling life-changing, world-changing artefacts

Social businesses are for-profit organizations committing to achieve one or several social change outcomes (e.g. promoting clean energy use, fighting malnutrition, women empowerment, etc.). They aim at financial self-sustainability, but their profits cannot be distributed as dividends: they must be systematically reinvested in the business. In this approach, the success of the firm is not only measured in profits, but also in social impact. The causal chain between the participation of the poor in market exchanges and poverty-reduction, human development, environmental protection or any other "social" goal is emphasized. Invoking "inclusive capitalism", as in the bottom of the pyramid approach, is not enough in the social business approach. The entrepreneurs must make their objectives and their theory of change explicit. They outline the causal channels between how goods or services are produced or distributed, and potential virtuous effects on society. Kianga Energy Ltd., for instance, resorts to story-telling to showcase the social transformation potential that its solar lanterns bear. On Kianga Energy's website, or in Kareem's (Kianga's CEO) interviews, several different causal channels are described: solar lights displace kerosene; they make people more productive and they are a source of extra-income in subsistence farming areas.

2.2.1. Solar lights displace kerosene

Other solar lights dealers operating in East-Africa offer robust and carefully designed products made in Germany, that are targeted at urban middle-class people who use them during power outages or as bedside lamps. But Kianga Energy wants to sell specifically to off-grid, rural poor households who would normally use kerosene, candles or flashlight powered by disposable batteries for lighting purposes. Neither of these lighting devices is seen as ecologically sustainable. As other companies selling solar products in developing countries, Kianga Energy Ltd. especially emphasizes kerosene lamps as a "dirty" and dangerous and polluting alternative to eradicate. The Kianga solar lighting device is repeatedly described as a health-enhancing device. Kianga Energy Ltd. claims to specifically target kerosene users, so as to substitute a clean and safe lighting source to a hazardous and noxious lighting source in the homes of the poorest. In an interview given during the world economic forum, Kianga Energy Ltd.'s CEO, Kareem, recalls his encounter with a little child badly burnt in an accident caused by a kerosene lamp. In the same interview, he mentions respiratory illnesses caused by the fumes polluting

indoor air. The Research Group 5 also insists on the positive health outcomes expected from the distribution of Kianga solar lights: they dedicate a full section of the questionnaire to health status assessment – part of their budget comes from a global health themed grant. If we follow Kianga's line of argumentation, selling solar products to people that are already connected to the grid can offer them some extra-convenience but selling solar light to off-grid people, so as to crowd out kerosene, can achieve bigger social transformation.

The focus on kerosene is also tightly related to one of the funding channels created by Kianga Energy Ltd. The increasing importance of climate change has contributed to make solar lights attractive to donors and multilateral aid organizations (Cross, 2013). The social business has a contract with a large commercial bank in the United States, which has agreed to purchase several million of Certified Emission Reduction units from Kianga Energy Ltd. over the course of ten years, starting in the early 2010s. This deal took place as part of the United Nations Clean Development Mechanism project[218], through which industries of the richest countries may "offset" their carbon emissions by financing projects in poor countries that are supposed to reduce carbon emissions in the atmosphere. Kianga Energy Ltd. produces an impact not only in the villages where it sells solar lights, but also in faraway places where polluting industries are based. Through the intermediary of a bank, carbon emissions caused by the combustion of small quantities of kerosene in African villages are made commensurable and substitutable with carbon emissions caused by large industries in the rich world. Carbon emissions, atmosphere and climate change have been problematized by climate sciences as global objects. This framing does not afford to contextualize, historically and politically, the issue of climate change (Guillemot, 2017).

But what does it mean to attempt at reducing the carbon emissions of people whose energy consumption per capita is already extremely low, to allow polluting industries to emit more carbon? What is the point of transferring polluting rights from people who pollute very little because of their extremely frugal way of life, to polluting industries? Is it obvious to commensurate tiny and scattered emissions such as the ones due to the use of kerosene lanterns with the large industries massive and concentrated emissions? Moreover, placing the burden of carbon emissions reduction on the poor completely overlooks the issue of climatic justice (Warlenius, 2018). Why should we expect off-grid villagers to reduce their already extremely weak carbon emissions, when historically, the responsibility for climate change can be traced

[218] https://cdm.unfccc.int/

to a small number of rich countries? (Malm, 2017)[219]? Which futures do we imagine with such equivalences? Shouldn't the poorest be allowed to live a less frugal life, and thus mechanically, to emit a little more carbon? The narrative used to justify carbon trading in the case of Kianga Energy Ltd. is not original though, a very similar one is used by the promoters of improved stoves:

> "According to stove advocates, through the simple act of cooking, the global poor will decelerate deforestation, impede global warming, reduce sexual violence, improve family health, develop "sustainable" markets, and produce an enduring stream of carbon offsets. On this latter point, through the intermediating efforts of carbon-certified stove initiatives, women across the developing world may soon—unknowingly and through utter necessity—subsidize the polluting activities of global industry. From a neoliberal perspective, technical panaceas justify the expansion of global industry and the conversion of poor beneficiaries into mass consumers of rescuing (Western) technologies, techniques, and business models." (Abdelnour and Saeed, 2014)

Although the end users of the solar lights are off-grid villagers, there are many other stakeholders who have an interest in Kianga's activities. We will come back to that point later on in the chapter.

2.2.2. Solar lights make people productive and purposeful

Not only cheaper and safer than kerosene, the Kianga solar lantern is also supposed to provide a brighter light. It can be used as a task lamp, enabling off-grid villagers to make a productive use of the dark hours. As the stories and pictures displayed on Kianga Energy Ltd.'s website suggest, adults can work longer hours. The pictures show a man crafting wooden furniture, a woman peeling vegetables, and young girls studying. The short stories include more heroic examples of people chasing predators away from their chicken coop, or using the light to keep wild animals from invading their compound. Women and girls explain how the light make them feel safer when they have to leave their home early in the morning, before sunrise, or at night. The enterprise is trying to encourage and present noble, moral uses for its products, which is usual for companies that are trying to capture a poor market (Cholez et al., 2012). While the users benefit from the light to become more productive, the micro-entrepreneurs are also the targets of particular expectations.

[219] We have recently seen a multiplication of concepts challenging the idea, conveyed in "anthropocene", that humanity at large is responsible for climate change. Plantationocene (Tsing, 2015) or capitalocene (Malm, 2016) insist that only a small fraction of humanity, which organized to its own profit a global extractive economy based on fossil fuel, is responsible for climate change.

The villagers operating the Kianga Energy Ltd.'s microbusinesses can educate themselves to entrepreneurship (most of them usually live from subsistence agriculture) and earn money from selling recharge services to their neighbors. On Kianga Energy Ltd.'s website, a dozen of them are pictured, posing with their solar panel and battery charging station. Each picture is captioned with the micro-entrepreneur's name and "goals": the micro-entrepreneurs state how they plan on using their earnings. Most of them say that they will spend the money towards health insurance or school fees, some of them hope to buy livestock or to reinvest the money in their farm[220]. This gallery of portraits appears on the "sponsor" page of the website, as if showing how responsibly the micro-entrepreneurs will use their income would help to convince the visitors to donate – Kianga Energy Ltd. heavily relies on grants and philanthropic donations, even though its ambition is to operate more and more like a for-profit.

2.3. Who wants off-grid villagers to use solar lights?

Some objects, cellphones for instance, have easily conquered the bottom of the pyramid markets. Contrary to improved stoves, solar lights and other portative toilets, there was no need for NGOs or social businesses to marketize cellphones to poor consumers: the poor needed no help to adopt cellphones. Why do they need help to adopt Kianga lights? Why did the research consortium put so many efforts in increasing the take-up rate for the lights?

Kianga Energy Ltd. mostly works with the mediation of various NGOs, in a variety of arrangements. In the case of the Kianga Energy Research Project, it is hard to disentangle the distribution of the lights to the clients from the experimental device through which the lights are distributed. The lights are not directly advertised to the potential customers; they are first advertised to the village leaders, whose interest in getting involved with Kianga Energy Ltd. goes beyond their appreciation of the lights. At some point, the Research Group 5 decided to compensate the village leaders to incentivize them to participate in the experiment. The field teams had run very late on the schedule: it was more difficult to recruit new villages than the Research Group 5 had anticipated. This delay was an issue to the researchers, but also to Kianga Energy Ltd., whose business was held back – they could not roll out in villages in the two districts of the experiment until the baseline survey was conducted by the fieldworkers and the

[220] The findings of the Research Group 5, published in a report in 2019, as well as an interview with micro-entrepreneurs published on Womenergy's website suggest that the earnings from the micro-businesses are very modest and mostly go towards increased food purchases, or towards the purchase of small items, like soap.

randomization completed by the field managers. Finally, the researchers and the Kianga Energy Ltd.'s management agreed on a new procedure to recruit villages faster.

I had heard of this new procedure to "speed up the process", as it was called, multiple times from Evidence against Poverty's field managers, but the one who explained it to me at length was Musaza (Kianga Energy Ltd.'s country director). A key component of that new procedure consisted in distributing the sum of 3,000 to the village leaders. This sum, equivalent to three to four days of wage for a farm laborer, was described as a "communication and facilitation" compensation for the leaders' efforts in convincing their constituents to take part in the experiment. Then, the public meeting during which the four micro-entrepreneurs were collectively appointed was abandoned: the village leaders were "empowered" to form the groups themselves. Musaza explains: "They do it perfectly without us. It shortens delays and saves money." In this configuration, the village leaders are not only financially incentivized to promote the creation of a Kianga Energy Ltd.'s micro-enterprise, but they also gain some influence, in being able to appoint the four people who will be involved in the micro-enterprise.

*

This section was dedicated to expose the terms in which the marketization of poverty is currently discussed and debated. The "bottom of the pyramid" simultaneously defines a market to conquer and a population to serve, and "social business" describes a type of commitment from the entrepreneurs. Together, these notions (at the intersection of which Kianga Energy Ltd. stands) convey the idea that the extension of markets in the poorest areas of the planet can be mutually beneficial for the businesses and for the poor. The devices distributed via this type of circuits "strive to be 'goods' in two senses, reflecting both ethical and economic ambitions, and combining care with self-interest" (Collier et al., 2017). I contribute to these reflections by shedding light on the fact that the marketization of the Kianga lights is multiple. It is not only directed at the end users, but also at many other protagonists. The solar lights are not only material objects meant to be used by poor, off-grid villagers in rural areas, but they are also potential policy instruments expected to solve problems that go beyond the daily lives of the end users. The lights are supposed to solve global problems (poverty, climate change) and as such, they are marketized towards institutional actors and philanthropists. (The Kianga Energy Research Project, by evaluating the social impact of Kianga Energy Ltd.'s activities, contributes to that dynamics). The marketization of objects such as the Kianga solar lights can be regarded as an attempt at making the poor behave in a way that fosters the global good. This echoes Andrew Barry's definition of a technological zone, which "can be understood as a structuring

of relations, which has a normative force, but one which does not necessarily take a disciplinary form" (Barry, 2006, p. 241).

Section 3: Prices as defining components of humanitarian artefacts

Kianga Energy Ltd.'s country director, Musaza, explained to the crowd of villagers who had congregated around him that it will cost them 100 to charge a light and 50 to charge a cell phone. A villager shouted "I don't have any money today!" Musaza answered something that translates approximately as "Too bad for you, man!". Another villager exclaimed that 100 is too much. Immediately, another man retorted him that he should spend less money on banana beer. What is worth spending money on, especially when money is so scarce? The poor are definitely too poor to pay the market price (whatever this means) for these little devices that are designed to improve their daily lives. Yet, for different reasons, they are still expected to pay to get them. This section focuses on the moral and political work accomplished by the prices of humanitarian or development devices. Prices do not only organize a flow of commodities by enabling transactions, they also achieve the moral and political alignment of different actors undertaking common projects. They are even crucial tools, especially when projects articulate private and public money.

3.1. The Kianga Lights: gifts or commodities?

Several interactions between Musaza and the villagers to whom the Kianga lights are distributed, and several comments made by Musaza, cast a doubt over the nature of the Kianga lights: are they commodities or charitable gifts?

When Musaza brought the charging equipment to one village, he kept reminding to the four micro-entrepreneurs (and to the villagers gathered around them) the favor that was made to them. He started by explaining that many different people were involved in the project, including donors in other countries. He described the micro-enterprise as being part of a project geared at remote, off-grid villages. He specified that the equipment was worth about half a million, and, as he collected the commitment fee of the micro-entrepreneurs group, he insisted that they were lucky to have to pay such a low amount. They only had to pay 12,000 (3,000

each), whereas in another district, Musaza told them, the micro-entrepreneurs were charged 40,000 (10,000 each).

By insisting on the large discount granted to the micro-entrepreneurs, Musaza makes clear that the Kianga LED lights and the charging equipment are not full-on commodities. Moreover, the charging equipment that the micro-entrepreneurs receive in exchange for the commitment fee comes with some expectations. Not only they must be diligent entrepreneurs, but they are also expected to spend their earnings in a way that is satisfying to the donors who finance the project. The equipment comes with moral strings attached: it is not a usual commodity. In the same time, Kianga addresses another message to the potential donors: it is made clear on Kianga Energy Ltd.'s website that the micro-entrepreneurs do not receive a gift: "It is not a handout!" The objects distributed by Kianga are neither commodities, nor gifts: despite the payments they made, the micro-entrepreneurs should still feel obliged and make efforts to prove deserving.

In a conversation we had afterwards, Musaza further commented on the fact that the commitment fee required from each micro-entrepreneur had been decreased from 10,000 to 3,000 per person. According to Musaza, it is understandable that a village would struggle to come up with 40,000 in just one week. But, he said, "a village that cannot gather 12,000 in a few days is just not motivated and one should not even bother insisting." Interestingly, Musaza does not emit a judgement on what it means for one person to pay 3,000 vs. 10,000, but on what it means for a *village* to gather 12,000 vs 40,000. He implies that if the village, as a whole, is motivated to receive a micro-enterprise, they should collectively find the money. Musaza implicitly refers to informal lending and borrowing practices between villagers. He expects them to organize and come up with money collectively, as a village, whereas only the four chosen micro-entrepreneurs will be acknowledged as fee payers by Kianga Energy Ltd. Bottom of the pyramid businesses rely and thrive on the informal networks created and maintained by people (Elyachar, 2012 ; Simone, 2004). Anthropologist Julia Elyachar argues that the development of business at the bottom of the pyramid has considerably capitalized on the informal connectivity networks created and maintained by people (2012). Elyachar refers to what urbanist AbdouMaliq Simone has described as "people as infrastructure", meaning that in underequipped and underserved places, people cannot engage in discrete transactions and return to their lives. They need to actively maintain personal networks and continuous relationships in order to pursue economic activities and ensure their survival (Simone, 2004). Elyachar suggests to better acknowledge the value of these informal networks, enabling people to make claims over them, and leverage them in their own interest.

3.2. Prices safeguard the shared meaning of projects

In the reports addressed by the Research Group 5 to its main funder, Womenergy, the project's prospective recipients are frequently referred to as "the poorest of the poor" or "the ultra-poor". This last category commonly designates the billion people in the world living under the international extreme poverty line set by the World Bank ($1.90 a day since 2015). While insisting on the low income of the villagers they wish to equip with solar lights, the Research Group 5 investigates a particular market-based solution (Kianga Energy Ltd.'s distribution model) that requires regular payments from them. This is not specific to Kianga: the hiatus between those who are in need and those who can pay often prevents companies from serving the neediest populations (Schwittay, 2011). The Kianga Energy Research Project strives to bridge that gap. This tricky paradox constitutes an important part of the issue that the Research Group 5 was contracted to look into. Indeed, they submitted a project corresponding to one of the five research areas defined in Womenergy's call for proposals, which was "the role of the private sector in scaling-up energy access." Starting from the premises that international organizations and public development agencies alone cannot afford to achieve universal energy access, Womenergy specifically tasks the researchers to explore market-based energy access solutions. For the Research Group 5, this translate in a price puzzle: at which price is it possible to sell solar energy products to people who have close to no money at all? The innovative character of the Kianga Energy Research Project lies in crafting prices that would let the poorest of the poor into the market for solar lighting.

Prices are also crucial in aligning the various protagonists of the project (researchers, donors and entrepreneurs). Kianga Energy Ltd. claims many wellbeing-enhancing impacts caused by the distribution of the solar lanterns: off-grid villagers will have access to a cheaper, safer, cleaner and more powerful lighting source, which will enable them to use the dark hours more productively. As explained in chapter 2, the Research Group 5 is tasked to evaluate the impact of the distribution of the solar lanterns, and to accurately quantify these life-improving effects. However, for the solar lanterns to achieve all the positive effects expected by Kianga Energy and the Research Group 5 on the villagers' lives, they must not only be purchased in the first place, but they also need to have their batteries charged on a regular basis. The purported life-improving potential of the solar lanterns depends on the villagers' willingness to pay for them and for battery charging services – on a different but related note, so does the viability of Kianga

Energy's micro-franchises. Given the very strong cash constraint faced by the poor, off-grid villagers Kianga Energy would like to sell to, pricing is a particularly sensitive issue. Kianga Energy Ltd.'s pricing problem forms a nexus that ties together the different aspects of the Kianga Energy project. Evidently, the commercial success of Kianga Energy Ltd. depends on finding the right pair of prices (price of a solar lantern; price of a battery recharge). But the success of the experiment, as a statistical data analysis endeavor, also depends on Kianga Energy's commercial success, which conditions the sample size as well as the quantity and quality of the data that the researchers will be able to collect and analyze[221]. That is why the Research Group 5 puts a lot of effort towards improving the take-up rate. Then, finding the right pair of prices is crucial for Kianga Energy Ltd. to target the right customers (poor, rural kerosene users) and thus to maintain its identity of a social business that sells a product with a purpose, in order to achieve social transformation. And of course, without this promise of social transformation and life-improvement for the poor, the multi-year research project funded by Womenergy would lose its very rationale. So, pricing is the cornerstone on which not only the material success of the project, but also the realization of its various meanings, depend. That is why the pricing experiments analyzed in the previous chapter seem so central to the Kianga Energy project, although they concern a relatively small portion of the villages in the experimental sample.

Wrong prices can lead to the moral failure of a project – or at least to an interpretive failure, following anthropologist David Mosse about successes and failures mostly resulting from interpretive work (Mosse, 2005). Linsey McGoey analyzes several development projects, involving large corporations as well as states or international institutions (2014). She insists on how much private companies benefit from public money when engaging in development projects. These public-private partnerships lead to higher expectations regarding prices. One of the projects McGoey describes involves the global alliance for vaccination and immunization (GAVI)[222], several pharmaceutical companies and several donor states. It was aimed at stimulating the development and distribution of vaccines for low income countries. Donor states committed to buy a certain quantity of a vaccine if the vaccine was successfully developed and

[221] Indeed, the success of the experiment (as a research endeavor) depends on the smooth and quick participation of the villages in the Kianga Energy's microbusiness establishment. Some villages have refused to take part in the experiment for various reasons, and the Research Group 5 has dedicated a lot of thinking (and money) to improve the enrollment of new villages in the experiment.

[222] Véra Ehrenstein and Daniel Neyland also study the prices of vaccines in the context of the GAVI (Ehrenstein and Neyland, 2018). The focus of their paper is on the notion of scale: the authors reflect on the ambition to scale-up immunization globally and reach a large number of people.

distributed in poor countries by pharmaceutical companies. This Advance Market Commitment (AMC) mechanism was successful, to the extent that two pharmaceutical companies responded. They produced pneumococcal vaccine and distributed it in several low-income countries. But the project was criticized for the price of the vaccines. The price initially recommended by GAVI was deemed too high and influenced by the pharmaceutical industries. After negotiations, the price per vaccine was lowered at a level deemed acceptable by the donor states. But throughout the negotiation process, the pharmaceutical companies never agreed to disclose information about their manufacturing costs. The initial price as well as the lowered price were regarded as arbitrarily set, at the discretion of the pharmaceutical companies. Suspicion that the donor states might have paid too much lingered and compromised the "interpretive" success of the project.

Because of the way the price was crafted (arbitrariness, lack of transparence), the project was deemed a moral failure. The vaccines were indeed produced and distributed in low-income countries, but had the donor states been ripped off? Should they have gotten more vaccine for the same amount of money? This example stresses the importance of the price as the locus for public and private actors to coordinate not only about a transaction but also over the political and moral meaning given to the action they are engaging in together. Robertson describes the failed search for a price on the market for water quality credits (2007). The commodity ("water quality") to be exchanged being poorly defined on this new, regulatory market, the clueless bankers looked towards the public authorities for guidance regarding price-setting. But, wary of any "distortion" to the spontaneous dynamics of the market, neither the public authorities nor the academic economists consented to provide any guidance. The author insists that such failures undermine the neoliberal belief that political activity is soluble in the market, with minimal public intervention, with the price as "the main guarantor of democracy" (Robertson, 2007, p. 520).

3.3. Prices as behavioral engineering tools

So far, we have discussed how prices contribute to the moral and political success of projects, focusing on the protagonists who design and fund them. However, the recipients are also concerned by the moral and political work achieved by the price. Will the villagers be interested in getting and using the solar lanterns? These two questions translate into two important concepts used in RCT proponents' vernacular: "technology adoption" and "usage." These issues are analyzed in close relation to pricing problems: which price maximizes the probability

that people will (1) acquire the life-improving device and (2) use it correctly? Researchers affiliated to the J-PAL have summarized the results of ten randomized experiments inquiring into the pricing of objects fulfilling basic health or education needs, such as bed nets, water purifier or school uniforms (Bates et al., 2012). The starting point of the article, entitled "The Price is Wrong" (and quoted by the Research Group 5), is that the poor cannot afford to pay the market price for these objects. Thus, the remaining options consist in charging them a small fee, or, alternatively, giving them the objects free of charge. Many of the experiments summarized in the article investigated the potential adverse effects of distributing things for free. Will people care for the object if they do not have to pay at least some money for it? Will they commit to use it correctly? Will they waste it, or try to resell it? Will they get used to receiving free things and refuse to pay for similar goods or services in the future? These questions frame pricing as a behavioral issue. As noted by Christian Berndt, in poor settings the focus tends to shift from markets to markets subjects, and marketization tends to go hand in hand with attempts at doing social engineering (2015). Price is not described as a market-ordering device, but rather as a factor influencing the way people relate to the life-enhancing objects intended for them. The price is analyzed as a psychological operator of connection between people and things, and thus, as a social engineering tool.

After compiling evidence from the ten experiments, the J-PAL researchers concluded that distributing basic necessity objects for free did not create the expected adverse effects. They also found that even a very small fee can prevent a large proportion of people from acquiring the objects, simply because they do not have the money. Acknowledging that the systematic distribution of such devices for free is difficult, they end the synthesis by proposing a set of criteria to distinguish between the cases when it is particularly necessary to implement free distribution and the cases when a small fee can be charged. After analyzing the data collected during the "voucher" experiment, the Research Group 5 unsurprisingly reaches the conclusion that the villagers' willingness to pay for a lantern is extremely low. They recommend that the solar lanterns should be heavily subsidized, and distributed at a very low price or even for free, to match the villagers' willingness to pay. They do not stress the difference between free distribution and cost-sharing, for two reasons. First, they rely on the findings exposed in Bates et al. (2012), showing that there is no major downside in distributing things for free. Second, the distinction between cost-sharing and free distribution is not that relevant to Kianga Energy's business model. Indeed, even when households get a solar lantern for free, they still have to repeatedly pay for battery charging services if they want to use it. The Research Group 5 is

more concerned with lowering the barrier represented by a high upfront cost (the lantern purchase).

Indeed, in Kianga Energy's model, a high adoption rate is not only sought-after *per se*, but also because it conditions the micro-businesses' success. Kianga Energy's model is not only supposed to increase energy access, but also to create a sustained income stream for the four villagers operating the battery-charging micro-business. So, in the technology adoption framing of the pricing problem, the price is engineered to foster not only the adoption, but also the repeated use of the lanterns. This pertains to a social engineering endeavor aimed at transforming people's consuming patterns. These new consuming patterns may then contribute to modify people's domestic practices. For instance, authors have described the electric lighting of private spaces as a biopolitical project of reforming domestic practices and fostering nuclear family models, at the expense of other schemes of sociability (Gupta, 2015b ; Von Schnitzler, 2013). The use of commodification to stimulate use and attachment to a device is hardly new, though. Michelle Murphy describes how the USAID sponsored family planning initiatives in Bangladesh, as early as in the 1970s, started to use market distribution as a strategy to enhance acceptance of family planning goals by people.

> "In social marketing, the work of measuring and soliciting desire was amplified by the persuasion of advertising and the market as a purportedly efficient commodity distribution system. The contraceptives themselves were sold at below market prices, often close to free, but nonetheless still circulated as commodities. At the heart of this approach was the belief that open markets not only offered the best distribution system for family planning supplies (and later public health interventions) but also for stimulating acceptance and affective attachments." (Murphy, 2017, p. 70)

Pursuing this argument, Murphy claims that the mass adjustment of affects achieved through the commodification of contraceptives contributes to a more general shift towards the economization of lives, by fostering an affective milieu favorable to further capitalist developments.

Let us come back to Kianga Energy Ltd. and its network of micro-enterprises. The four micro-entrepreneurs are equipped with a solar-powered battery charger. Alternatively, in times of insufficient sunlight, they can use a pedal dynamo instead of the solar panel. But a full battery does not mean that the charger is ready to use. To be able to charge their clients' lanterns, the micro-entrepreneurs need to purchase credit from Kianga Energy Ltd. first. The charger is equipped with a telephonic chip and with a remote-locking mechanism. The charger cannot be used unless the micro-entrepreneurs send a prepayment to Kianga Energy Ltd. through a mobile

money service. Upon reception of the mobile money payment, Kianga Energy Ltd. sends a code, via a text message, to the micro-entrepreneurs. The micro-entrepreneurs enter the code on the charger's numeric pad to unlock the device, which will lock again once all the credit is consumed. For each lantern recharged, the four micro-entrepreneurs prepay 50 to the company. As the customers are normally charged 100 for each recharge, the micro-enterprise earns a net profit of 50 for each recharge sold. The system designed by Kianga Energy Ltd. heavily relies on prepayment: the micro-entrepreneurs prepay a fee to the company in order to retail energy, whereas the end customers prepay the energy they consume to the micro-entrepreneurs.

Prepayment is a deeply political technology, increasingly used for extending access to utilities in poor settings (Von Schnitzler, 2008, 2013, 2016). On the one hand, it offers companies and public monopolies a guarantee against payment defaults, encouraging them to extend access to a previously underserved poor population. These newly served customers are granted access to new services, but this access is immediately restricted, and closely conditioned to their capacity to make payments. The inhabitants of rich countries usually post-pay their utilities; they have some room for maneuver and negotiation when they fail to pay a bill. On the contrary, the users compelled to prepayment are immediately sanctioned by the suspension of their service whenever they fail to make a payment.

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This section pursues the reflection started in the previous chapter about the agency and the political productivity of prices. The pricing of humanitarian artefacts is extremely sensitive: it has the double role of preserving the political and moral narrative attached to a particular project, and of fine-tuning the behaviors of the people who make the payments.

Conclusion

During his fieldwork in Lesotho in the early 1980s, development anthropologist James Ferguson lived in a traditional house, round-shaped, with walls made out of mud and dung and a thatched roof. Not only did the house remain cool in the summer and warm in the winter, but it also pleased Ferguson esthetically: he thought it fitted well in the hilly landscape. To Ferguson's surprise, his Basotho neighbors started to build rectangular houses made of cinder blocks, with a galvanized metal roof and a cement floor. These new "European style" houses were not as well insulated as the traditional ones, and Ferguson found them ugly. He discussed

the matter with an elder he knew well, Mr. Lebona. Instead of an answer, he got questions: the man asked about Ferguson's father's house, back in the US. Was it a round house with a thatched roof or a rectangular house made of hard material? And how many rooms did this house have? Ferguson answered that his father's house had about ten rooms. "You see, that's the direction we'd like to move towards", the old man answered.

Comparing his own house to the house of a distant US inhabitant, the man was claiming a common ground for assessing housing quality. Would the anthropologist be willing to live in a round house with a thatched roof in his home country? Would the designers of the PeePoo bag or of the LifeStraw be willing to use these devices on a normal basis, instead of clean running water and networked sanitation? Whereas Ferguson was concerned with cultural hegemony, his interlocutor was concerned with material well-being. Not only was he claiming his belonging to a larger zone of qualification that extended as far as the USA, but he was also asserting a projection towards the future. His two-room rectangular house was but a step towards more ambitious material aspirations[223].

The different sections of the chapter, in different ways, point towards a particular vision of poverty action. Humanitarian design creates objects that can make the life of the poor a little easier, a little safer and more comfortable. However, these objects stand at the complete opposite of Mr. Lebona's uncomfortable and ugly but auspicious house: these carefully designed humanitarian artefacts can be interpreted as signs of resignation. These artifacts are often produced to cater, in a minimalist way, to the poor's basic needs, they are not geared at lifting them out of poverty in any significant way. Poverty action is problematized in terms of facilitating access to a certain number of goods and services regarded as basic. Humanitarian artefacts define a specific "zone of qualification" (Barry, 2006), in which the living standards are defined along minimal technical criteria, in complete rupture with the criteria used to assess life in more privileged settings.

The marketization of these objects is also "vigorously un-relational."[224] The disparity of income between the poor and other consumers is so large that specific markets have to be engineered from scratch. The low prices of these devices further entrench the gap between the poor and the

[223] Guillaume Lachenal and Aïssatou Mbodj-Pouye discuss this projection towards the future in a paper dedicated to political nostalgia in Africa (2014). Focusing on the affective dimension of development policies, they describe the effect of the broken promises of individual and collective "emergence."

[224] This term, actually used to comment on RCTs (Webber, 2015), seemed very appropriate to describe humanitarian artefacts as well.

non-poor. The question is not "how can the income of the poor be increased, so that they can afford such and such basic commodities" but "how can the price of such and such basic commodities can be lowered, so that the poor can afford it despite their extremely low income." These markets created from scratch to cater for the "bottom billion" are often fraught with attempts at transforming the poor into more disciplined, more civilized, more productive and more moral people.

Together, the design and marketization of humanitarian artefacts define a technological zone disconnecting the global poor from the global middle class. This disconnection is not only spatial but also related to "disjunctive futures" (Roy and Crane, 2015) and splintering temporalities. Sociologist Geoffrey Bowker, commenting on various approaches to biodiversity, describes the discursive construction of a double temporality (Bowker, 2007). Humanity shall grow and change and evolve, whereas the rest of the beings, the animal and vegetal populations, shall merely be conserved, forming a still background against which the evolution of the human species is envisioned. What if the little development and humanitarian artefacts were achieving a similar result? While bringing quick fixes focused on improving a status quo (making it easier to live with very little) for the poorest, they are linked to the development of business in rich countries, where the future is still very much envisioned in terms of growth and progress.

General conclusion

In this dissertation, I have argued that **RCTs produce a micropolitics of poverty**, meaning that they construct epistemic and political fragments of the world within which they explain poverty and contain poverty action. Micropolitics of poverty describes both a particular way of producing poverty knowledge and a particular way of conceiving responses to poverty issues. RCTs produce knowledge by establishing causal relations between a poverty-reduction intervention and an array of outcomes (such as household income or food consumption) averaged at the scale of the treatment group. The establishment of such a causal relation involves disentangling the impact of the intervention at hand from the impact of other factors (**chapter 1**). This disentanglement is made possible by the construction of labified and controlled environments, which form small fragments of the world (**chapter 2**). RCTs focus on analyzing causal relations within these fragments (**chapter 3**). One experiment after the other, the randomistas create a repository of poverty interventions unfolding within small fragments of the world and aiming at transforming the poor themselves or their immediate environment. In turn, this collection of interventions produces a particular understanding of global poverty as a phenomenon rooted in individual behaviors or in a local lack of resources. As the causes of poverty are contained within these small fragments scattered across the globe, so are the remedies promoted by the RCT movement. RCTs configure poverty action as a discrete series of transformations that must be contained within the fragmentary, discontinuous and patchy but global space of poverty constructed one experiment after the other. Micropolitics of poverty shines the light on fragments of the world, where the poor live: these places are seen as places to reform, through the transformation of individuals. Often, this transformation takes the form of an invitation addressed to the poor to participate in markets, as producers or as consumers. While attention is focused on the poor, their behaviors and the material artefacts designed for them and sold at below-market prices (**chapter 4 and 5**), the rest of the world remains unquestioned. The concernment of rich parts of the world for global poverty takes the form of action at a distance, implemented exclusively in places inhabited by the poor. Micropolitics of poverty is a particular way of constructing poverty as a global object.

The five chapters of the dissertation were built as consistent empirical units dealing with five different objects. In the **first chapter**, I defined micropolitics of poverty and explained to which extent this notion inherits from the works of Michel Foucault, and Gilles Deleuze and Félix Guattari. I grounded the notion of micropolitics in **the methodology of RCTs** and illustrated the ideas of fragmentation, disentanglement and containment with the way RCT proponents construct their experimental samples. I explored how RCT proponents seek statistical unbiasedness at the expense of external validity. I tried to contribute to the growing literature discussing RCTs by producing a case study about a particularly complex RCT, anonymized as the Kianga Energy Research Project. I recounted this experiment in detail, so as to go beyond a discussion about RCTs as a successful yet controversial impact evaluation methodology. I tried to grasp RCTs as a series of material encounters, producing friction between the experiment and the villagers.

In the **second chapter**, I described **the material operations accomplished by the fieldworkers** to materialize a small fragment of the world. I explained how the fieldworkers turn remote villages into an experimental field site suitable for the implementation of an RCT, and how they collect data within this field site. Meanwhile, I qualified the intense and transformative molecular micropolitics of poverty that happens on the occasion of the encounter between the fieldworkers and the villagers. Through mundane interactions as well as subtle manipulations of the villagers' hopes and aspirations, the fieldworkers bring to the village a taste of what "development" might mean.

In the **third chapter**, I sought to shed light on **the epistemic work of the economists** who conduct the Kianga Energy Research Project. Focusing on one dimension of the experiment, the supposedly empowering impact of female entrepreneurship, I explained how the economists construct their research questions and turn them into experimental objects. I showed that the implicit theory of change underpinning the experiment paradoxically relies on the transformation of women into a fantasized figure of the fierce entrepreneur, while reasserting their traditional domestic role of care-takers.

In the **fourth chapter**, I described the economists' quest for the prices that would enable the market-based distribution of solar lights to the villagers. **The experimental search for prices** takes such a form that the villagers are not encouraged to explore their willingness to pay for a particular commodity (an LED light rechargeable at the village micro-enterprise) but their willingness to act as payers in general. Moreover, the villagers' disposition to pay is subtly framed as a step toward enhanced citizenship. I described the pricing experiments using the

exploratory notion of {price}-world, to emphasize the world-making qualities of prices: the experimental prices exert a transformative action in the villages and influence the conduct.

In the **fifth chapter**, I tried to understand **the solar lights and charging devices commercialized by Kianga Energy Ltd. as humanitarian artefacts** bringing a minimalist and simplistic response to the complex ailments of poverty. I showed that the marketization and pricing strategies used to distribute humanitarian artefacts play a key role in producing a narrative guaranteeing their humanitarian quality.

What have we learnt about RCTs?

Hereafter, I present some transversal findings of the dissertation, pertaining to the type of knowledge produced by RCTs, to the type of space constructed by RCTs, and to the *in-situ* effects of RCTs.

A stereotyped figure of the global poor

RCT proponents commit to an empirical approach to producing poverty knowledge. This dissertation has looked into the details of how the economists practicing RCTs do empirical research, into how they construct their research questions and their experimental objects. It appears that the adherence between their research questions and the particular place where they organize experiment is very low. Economists practicing RCTs do not produce knowledge that is meant to be relevant locally, but they make an instrumental use of localized field sites to produce placeless evidence. When there is a hiatus between problems such as they are expressed in the literature in economics and problems such as they are experienced in the field sites, economists tend to favor their insertion in the existing academic discussions, at the expense of the empirical relevance of their research questions. This is even more striking when it comes to data collection. I have proposed the term “anchored fiction” to qualify the data collected during the baseline survey conducted at the inception of the experiment. I argued that anchored fictions are the best possible data that the fieldworkers can produce. Given the gap between the categories of the questionnaire and the way questions are phrased on the one hand, and the life of the villagers on the other hand, the fieldworkers strive to create a middle ground between the questionnaire and the villagers. The fieldworkers have to take a very active role in the reformulation of both the questions and the answers to produce data that makes sense both in

the village and in the empty cases of the questionnaire. Paradoxically, RCTs are simultaneously intrusive and out-of-touch with the villagers' experience.

The randomistas' ambition to produce global evidence curbs their interest for the particular places where they run experiments, and for the particular people on whom they experiment. Anthropologist Akhil Gupta suggests that the construction of a stereotyped figure of the global poor "as abject objects of sympathy and aid" is related to a particular use of the category of "global poverty" (2015a). Gupta regrets that global poverty does not refer to "the systematic, structural inequality in a globally interconnected world" but to a global count of people living under a certain income threshold:

> "Moreover, the discourse of global poverty arose in a context in which the key concern was what the wealthy nation-states and peoples in the global North could do for the unfortunate poor in the global South. […] The referent of 'global poverty' was almost never poor people in the global North. It was understood that the globally poor were the poor people in the global South, and aggregating them under the umbrella category of those 'who lived under $1/day' made it possible to put people who were desperately poor into the same statistical and analytical framework. If the dominant mode of relating to the poor was that of charity or aid, it made sense to lump them together in this way." (Gupta, 2015a, p. 92)

In a similar way, it seems that economists conducting RCTs regard the participants in their experiments as being part of this large category, the global poor, defined in relation to the type of actions that actors of international development in the global North are ready to undertake. The Research Group 5 for instance, relies on a very stereotyped figure of the global poor in the Kianga Energy Research Project. The villagers are seen as being strongly rooted in the immutable space of their village, which is imagined as a self-sustaining economic unit. They are seen as people with strong gendered identities, formed in a patriarchal social organization. Finally, they are seen as people who are excluded from markets and who need to be equipped so as to be able to successfully enter markets, as consumers or producers. This stereotyped figure of the global poor enables the researchers to conduct RCTs with no prior knowledge of the places where they experiment. It also provides them with grounds for claiming the generalizability of their results in other places inhabited by the "global poor".

Discontinuities

I have tried to qualify a patchy global space that both encompasses poverty and contains poverty action. This supposes not only a certain homogeneity, provided by the figure of the global poor, but also a series of discontinuities separating the patchy global space of poverty from its outside.

The first type of discontinuity is analytical. I have shown that RCTs are geared at emphasizing the explanations of poverty that take place within experimental fragments of the world, at the expense of systemic and relational explanations of poverty. The second type of discontinuity is fiscal. I have argued that RCT proponents are striving to identify poverty-reduction interventions that are not only efficient but also as inexpensive as possible. A strong idea behind the success of RCTs is that poverty issues must be solved within the limits of a moderate and reasonable budget. The use of RCTs in poverty action goes against the idea of a global redistribution of resources. Rather, it supports the idea of helping the poor on their way to self-sufficiency and self-advancement, through the modification of their decision-making pattern and the accumulation of human capital. The third type of discontinuity is infrastructural. Rather than extending networked facilities to the poor, RCTs promote the distribution of cheaper, lighter alternatives. Finally, there is a discontinuation of markets. The aim is not to increase the income of the poor so that they can buy things at market price, but to design inexpensive commodities distributed on markets engineered especially for the poor.

Experimental effervescence

In this dissertation I have contended that the complicated protocol aimed at implementing the intervention under evaluation in the villages and at collecting experimental data produces its own effect. The experimental process itself, independently from the intervention (here, the creation of micro-enterprises selling solar lights) exerts a transformative action in the villages. I have argued that the experiment produces effervescence, and is in and of itself a possible ferment of transformation, at least through a subtle action on the hopes and desires of the villagers. First, the villagers are invited to turn into survey respondents. The questionnaire involves a quite intense face-to-face interaction between a villager and a fieldworker, during which they both make efforts to successfully go through the questionnaire. The questionnaire survey conducted as part of the experiment does not only extract data, but it also conveys information and normative values to the villagers, through the way the questions are phrased and through the categories that are used. Second, the villagers are invited to act as payers. The experiment creates emulation around the willingness and ability of the villagers to pay a price they were randomly assigned. Moreover, the experiment frames the act of paying as fostering citizenship and as a step towards a more modern and comfortable life. Experiments, regardless of which particular poverty-reduction intervention is under evaluation, are implemented in ways that are likely to interfere with people's aspirations and ideas of what the good life is. I

have questioned the adequacy between the aspirations possibly stimulated in the wake of the experiment and the means delivered by the intervention to reach these aspirations.

Limits and blind spots

Through the study of RCTs, I have sought to shed light on the contemporary forms of poverty action. RCTs are at the heart of a constellation of interconnecting practices and trends (e.g. evidence-based policy, business at the bottom of the pyramid, humanitarian design, increasing role of private actors) that together seem to describe the most recent evolutions in international development. However, my choice to focus on RCTs leaves some important contemporary phenomena unattended. The increasing Chinese investments in Africa, and particularly in large infrastructural equipment (Shen, 2013), contradicts my account of international development as a collection of experimental, minimalist projects. More generally, it would be useful to reflect on the share of RCTs in the global flows of aid money: how much of it is used to fund an RCT, or to fund a poverty-reduction intervention the impact of which was certified by an RCT? RCTs have certainly captured much of the academic, mediatic and institutional space, but what do they represent in terms of financial flows?

I have tried to analyze RCTs in terms of something I have called the micropolitics of poverty. I have insisted on a particular way of disentangling causes, of fragmenting space and populations, so as to contain poverty within an epistemic and political space inhabited by the poor exclusively. I have relied on Andrew Barry's concept of "technological zone" (2006) and on Anna Tsing's notion of "patch" (2015). In so doing, I have, much like the randomistas, circumvented the question of the state. An interesting research perspective to pursue this doctoral work would be to work on cases in which RCTs are organized in close collaboration with the state. For instance, the J-PAL has cultivated strong relations with the governments of Kenya and India. Would my account of RCTs have been different, had I followed an experiment in one of those countries?

Finally, my account of RCTs makes a very discreet place for the villagers, for the reasons exposed in the introduction. An analysis of RCTs from the perspective of the people who are enrolled in it might complicate the story. How much do the villagers know about the experimental design? What matters to them in the RCT? Is it just a development intervention among others that they may be receiving? What is their experience of being surveyed, how

would they comment on it? In relation to that line of reflection, what remains from the RCT after the end of the experiment? How do people remember it and which material and affective traces does it leave? What are the aftermaths of an RCT? It might be fruitful to escape the short temporality of the project and to visit the villages a few years after the project's closure.

Micropolitics of poverty outside of the realm of RCTs

I would like to conclude this dissertation by tentatively trying out the notion of micropolitics of poverty on another poverty-reduction project, very different from the Kianga Energy Research Project. I shall now briefly present another field I investigated during my field trip, in 2016. In between the days I spent in the villages shadowing Evidence against Poverty's field teams, I studied another poverty-alleviation project, ran by an NGO – let us call it Seeds for Life (SoL).

SoL is a grassroots NGO created by three women from the US. It aims at addressing infantile chronic malnutrition in two rural districts of the country through the education of mothers: it offers a 14-week training curriculum targeted at the mothers of malnourished children. During the biweekly trainings, mothers are taught how to grow a home garden. The participants receive some inputs: a package of seeds and seedlings, small cattle (chickens or rabbits), some water purifying packets. The garden is supposed to work for everyone, even for landless family with just a tiny plot of land in front of their house. They are taught how to cook a balanced meal from what grows in their garden, even if they only possess one pot to cook in. They are also taught about various health topics (e.g. HIV, mental health, family planning) that are regarded as being relevant to mothers' capacity to adequately care for their children. Shortly after its inception in the late 2000s, SoL shifted its activities from land rights advocacy to infantile chronic malnutrition. This particular issue was seen as more relevant, because it was very widespread, yet not addressed at all by the government – unlike infantile acute malnutrition, which was treated in the health centers and hospitals. In this early programmatic shift, an important trend appeared, that can still be observed in the current activities of the NGO. SoL adjusted to the territory where it had settled, even at the cost of a radical change in its mission. This is a first sign of something like an ecological approach.

A salient characteristic of how SoL works is its effort to adapt to local constraints. The organization has defined various ecosystems within its area of intervention. Each ecosystem is defined by its climate and the quality of the soil. The garden package distributed to the

participants vary from one ecosystem to another, to make sure that the seeds and seedlings distributed will grow in the environments where they will be planted. The chicken and rabbits distributed to the participants are also carefully sourced: they are purchased very close to the places where the recipients live, to make sure that they will adapt well. Even the human elements of the program are locally sourced: SoL recruits its field educators in the rural areas where the mothers participating in the program live.

The activities of SoL are very different from the Kianga Energy Research Project. SoL is a long-term project, based on a very detailed and specific knowledge of the territory on which it is implanted. There is no economist working with SoL, but agronomists, medical doctors, social workers and global health experts. The project does not include market-based interventions. However, several elements suggest that SoL also produces a kind of micropolitics of poverty, which is grounded in agronomics rather than economics. The prism of the micropolitics of poverty enables to find a common pattern in these two interventions, but also to contrast them by focusing the attention on the different types on knowledge on which they are grounded.

First, the organization heavily relies on **individual metamorphosis to achieve change**. It teaches women how to reproduce, in quantity (family planning) and in quality (child care and hygiene). SoL teaches its participants new practices of care (for their families, for their garden, for their livestock). These practices of care are supposed to ensure an improved growth (for their babies, their plants, their animals). The behavioral component is SoL's activities goes deep. SoL teaches women what they should ingest and feed their babies (e.g. leafy greens, deworming pills, iron tablets…) or stop to ingest and feed their babies (e.g. cake and soda, alcohol, dirt, remedies prepared by traditional healers). The mothers are trained to transform their understanding of what a healthy baby is. The training they receive clearly defines the therapeutic theories and propositions to be rejected and offers new ones. The training also redefines a geography of therapeutic options – at home with the help of the community health worker, or at the health center, but never at the traditional healer's.

Second, SoL has a very **sophisticated practice of epistemic fragmentation, rooted in agronomics**. For SoL, an accurate knowledge of the territory is crucial to the success of the approach. Its agronomists define homogenous bioclimatic ecosystemic units, which requires very accurate local knowledge. The fragments are constructed in relation to the natural qualities of the territory (of the soil, of the climate). They set limits to the mobility of living creatures (plants, animals, humans). The practices of care taught to the mothers are tailored to be compatible with the constraints and limitations that these mothers face (e.g. due to extreme

poverty or climate and soil quality). SoL tries to fit in its environment (both institutional and bioclimatic). Rather than a way out of poverty, SoL offers a set of coping strategies to live better in extreme poverty

Third, SoL accomplishes a **clear gesture of containment**. The transformations that are proposed by SoL to its beneficiaries could be summarized with the idea of becoming-plant. The NGO engages the mothers to territorialize themselves, to stay in place, to go local, to grow roots, to better anchor themselves in their home, in their gardens, in the soil. They are invited to fit as best as they can within a bioclimatic system. They are taught how to best use their tiny plot of land, their only pot, their rare resources, and the limited public health facilities. They are thought of as belonging to parts of an integrated and closed system of living things (humans, plants, animals, microbes). The mothers are invited to create the right alliances within their ecosystem, to find some kind of harmony where they are, and grow. The blind spot of this paradigm of autochthony developed by SoL is the mobility of the international staff and of the money that funds its activities.

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The micropolitics of poverty is a configuration in which protagonists from rich countries – including the author of this dissertation – enjoy the privilege of mobility or action at a distance, to observe, discuss or address problems experienced by the poorest inhabitants of the poorest countries in the world. A striking characteristic of RCTs is the gap between the huge resources invested in the effort to reach remote places – money, manpower, multi-stakeholder partnerships – and the light-weight and inexpensive solutions that are eventually delivered to the poor as part of the experiments. Micropolitics of poverty is a configuration describing poverty as a series of ailments affecting people from the global South, that can be remedied by people from the global North, in a way that preserves a global status quo. Micropolitics of poverty bears the obsolete promise that global poverty problems can be solved by acting exclusively within enclaves inhabited by the poor, and without threatening the way of life experienced in rich countries. Meanwhile, we are experiencing climate change, pandemic crisis, and peaking social inequalities, everywhere.

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RÉSUMÉ

La thèse discute l'utilisation des expérimentations contrôlées randomisées en économie du développement. Selon ses promoteurs, cette méthode d'évaluation d'impact, inspirée des essais cliniques, permet d'identifier les interventions les plus efficaces de lutte contre la pauvreté. La thèse interroge cette approche expérimentale de la pauvreté et fait la proposition suivante : les expérimentations randomisées contrôlées produisent une micropolitique de la pauvreté. Elles produisent des fragments du monde, à l'intérieur desquels le problème de la pauvreté globale est confiné, à la fois sur un plan analytique et sur un plan politique. En dramatisant l'importance d'évaluer rigoureusement, les expérimentations contrôlées randomisées ont accentué certaines explications causales (micro, locales, comportementales) de la pauvreté au détriment d'autres (structurelles, globales, historiques), laissées dans l'ombre parce qu'elles ne sont pas solubles dans le dispositif expérimental. L'enquête, ainsi restreinte aux pauvres et à leur environnement immédiat, exclut de l'espace des causes le rôle des pays riches, d'où sont formulées les politiques de lutte contre une pauvreté pourtant dite « globale ». Empiriquement, la thèse s'appuie sur l'ethnographie d'une expérimentation contrôlée randomisée, en Afrique de l'Est.

MOTS CLÉS

Expérimentations contrôlées randomisées, pauvreté globale, micropolitique, marchés du bas de la pyramide, ethnographie, anthropologie du développement, sociologie économique

ABSTRACT

The dissertation discusses the use of randomized controlled trials (RCTs) in poverty action. RCT proponents claim that this impact evaluation method, inspired from clinical trials, enables to identify the most efficient poverty-reduction interventions. The dissertation questions this experimental approach to poverty (recently rewarded by the Nobel memorial prize in economics). The thesis main contention is that RCTs produce a micropolitics of poverty. They proceed through the epistemic and political fragmentation of the world. They define a patchy, discontinuous space in which global poverty can be analyzed according to a standardized protocol, and within which poverty action can be contained. Empirically, the dissertation is based on the ethnographic account of an RCT, in East Africa.

KEYWORDS

Randomized controlled trials, global poverty, micropolitics, bottom of the pyramid markets, ethnography, anthropology of development, economic sociology