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Households' aspirations for rural development through agriculture

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Abstract

In sub-Saharan Africa, rural households are the focus of many development efforts and the transformation of smallholder agriculture is one entry point for this process. Understanding farming households' technology choices remains one of the most critical aspects of agricultural research in rural areas. However, many technologies that are known to be effective and potentially highly beneficial have remained widely unused. One reason is that predicting farmers' decisions concerning agricultural technologies using conventional economic theories is flawed. In this article, we suggest that human aspirations have a much greater influence on technology choices than hitherto believed. We further argue that a better understanding of aspirations will improve the targeting of technology development by researchers. We propose distributed ethnography to empirically test the influence of human aspirations on technology choice. From such insight, we anticipate better research priority setting as well as more effective rural development strategies in general.

Keywords

Distributed ethnography, behaviour, decision-making, household choices, livelihood portfolio

Introduction

In sub-Saharan Africa, rural households have increasingly diverse income portfolios. These portfolios comprise numerous farming activities as well as multiple off- and non-farm jobs, remittances and pensions (Barrett et al., 2001; Loison, 2015; Reardon, 1997). For agricultural research, this diversity adds another layer to the already complex interactions within farming systems. Agricultural researchers promote the adoption by rural households of sustainable and profitable farm technologies aimed at improving living standards. Targeting farming households in development-oriented agricultural research, however, is often solely based on biophysical resources and potential markets for crop and livestock products. While this approach has led to some successes in the past, the spread of new technologies among households and any associated productivity gains remain below their anticipated potential (Sumberg, 2005; Walker and Alwang, 2015). Targeting households in such a way rarely addresses the deeply rooted human desires stretching both on and beyond the farm. Simply looking at farming options and needs, such as financial resources, information and markets, does not help in understanding why some farmers adopt while others reject technologies. To understand this gap, as we argue in this article, requires researchers to acknowledge the wider concerns of rural households and work towards a better understanding of the aspirations that influence their life choices. In this context, aspirations are not defined in terms of welfare levels (see e.g. Bernard et al., 2011; Knight and Gunatilaka, 2012; Macours and Vakis, 2009; Mekonnen and Gerber, 2017), which we would rather call ambitions but rather income compositions that households are pursuing for various personally determined reasons. The reasons are personalized combinations of classical goals around wealth but will also be heavily influenced by happiness, skills and interests, status and social as well as political considerations. Aspirations in this context should be looked upon as medium-term goals. Therefore, ambitions determine the distance from the status quo, while aspirations give the direction within the sphere of perceived options. We think of the medium term as a time span that allows

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enough time to aspire to actual changes in the livelihood strategies and sufficient time to move towards those.

After advances of the sustainable livelihoods literature in the 1990s (see e.g. Chambers and Conway, 1992; de Haan and Zoomers, 2005; Scoones, 1998), this fruitful debate slowed down due to the lack of effective methods to understand livelihood aspirations. As a consequence, the pluriactivity of households disappeared from the more recent literature. Instead, the literature dealing with the development trajectories of rural households is anchored in two contrasting paradigms with clear implications for targeting agricultural research. The first paradigm postulates agriculture as the key to the development of people (Glover et al., 2016), simply because most rural households are engaged in agriculture to some degree. The international agricultural research of the CGIAR,[1] for example, operates under this basic assumption and tries to improve farming practices and so increase yields and farm profitability (Asfaw et al., 2011; Shiferaw et al., 2014; Sumberg, 2005; Verkaart et al., 2017; Walker and Alwang, 2015). The second paradigm presumes that urbanization and gross domestic product growth enable households to participate in the growing off-farm and non-farm economy. This is assumed to be what most people strive for. The main argument here is the pull of higher incomes available in other sectors and the push of drudgery in farming. Especially for many households with small farms, few opportunities and poor returns from farming (Harris and Orr, 2014) drive diversification out of agriculture (Barrett et al., 2001; Mausch, 2010; Reardon, 1997). In fact, for many rural households, balancing multiple income streams and the inevitable trade-offs required in the context of limited time, resources and skills is a more realistic scenario.

Both paradigms, however, rely on questionable assumptions. Just because households engage in farming, not all will be fixated on it and not all agricultural interventions will generate impact. Similarly, just because people derive income from off-farm employment does not mean these are sufficiently attractive. Both paradigms derive their empirical underpinning from the past and present observable human behaviour. For example, both paradigms assume (either implicitly or explicitly) that people's aspirations are reflected in their choices and that, conversely, past choices are a representative of the influence their aspirations would have exerted on the current and future choices. Therefore, conventional economic theories often use panel data and cause-and-effect relationships to extrapolate future pathways of behaviour. However, decisions are made in a constraint scenario with limited financial resources, market access and other economic and measurable factors that determine potential or perceived options.

Researchers addressing these paradigms assume that rural farming operates under reasonably predictable conditions and that, while the systems often involve multiple operations, they are still possible to analyse and understand. However, because rural households are embedded in complex livelihood systems beyond their farming operations, with diverse income streams and highly complex and interacting influencers of these, researchers should consider them as highly complex systems with 'no immediately apparent relationship between cause and effect' can be identified (Snowden and Boone, 2007).

Furthermore, evidence from behavioural science indicates that people's decisions are less rational than conventional economic theory predicts (Ariely, 2008; Camerer et al., 2011; Kahneman, 2011; Kahneman and Tversky, 1979), demystifying the notion of *homo oeconomicus*, the rational protagonist around which theories of economics are largely based. Our thoughts are shaped by our subjective emotions and social norms significantly more than pure rationality (Cialdini, 2008; Kahneman and Miller, 1986; Loewenstein, 2000). Thus, attempting to predict future behaviour purely from the observable characteristics of past development pathways will result in attributional errors, especially when ignoring the essential influencers of decision-making, notably people's aspirations and other factors affecting individual choices. Consequently, agricultural researchers must formulate a paradigm that acknowledges highly complex situations. Standard analysis, as we explain in this article, is not able to depict accurately and guide rural studies.

Within the sphere of economically viable options, we argue that aspirations are a better predictor of household trajectories and, therefore, rural development in general. Furthermore, household decisions are influenced by cognitive processes that will often bias their rationality. We argue that aspirations determine the end goal households are pursuing and behavioural biases will influence their choice and thus shape the pathway they will take towards achieving their aspired state. In this conceptual article, we will outline approaches and future research that will be critical to improve our understanding of development processes and therefore help to make development efforts more effective. Following this brief introduction, we will explain why aspirations are too complex to be understood using current methods and approaches. We will then outline the origin and contribution of distributed ethnography as a promising approach to understanding aspirations at scales that are useful for rural development planners and development practitioners. Finally, we will contextualize this against the background of biases and sketch future research needs in this area. It should be noted here that this argument is theoretical in nature.

From choice experiments to understanding aspirations at scale

As utility-maximizing individuals, the rational investor would always adopt a new yield-increasing technology, as long as the expected yield justifies the additional cost and the price fits their budget constraints. Recent research has begun to utilize stated preference-based, rather than observation-based, measures to isolate key factors consciously driving smallholder farmer decision-making (see e.g. Mahadevan and Asafu-Adjaye, 2015; Mangham et al., 2009). The application of experiments to determine the preferences and trade-offs made between choice attributes by smallholder farmers should lead to a greater

understanding of the factors that are considered when making the choice to adopt or not. Choice experiments enable us to explore more fundamental attributes influencing farmers' behaviour such as risk, price, appearance, yield of new crop varieties and the trade-offs between those attributes.

Choice experiments can produce the much needed, valuable information on the individual attributes that farmers take account of in their agricultural investment. As the evidence shows, providing supposedly desirable technologies at affordable prices has only been the necessary – but not the sufficient – condition to induce wide-scale adoption. Simply expanding the choice, or increasing the specialization, of available technologies is unlikely to increase technology adoption. Moreover, choice experiments are still founded upon rational agent assumptions that people have fully informed and consistent preferences (Ryan and Gerard, 2005). The attributes are framed around a very narrow set of explicit choices. More abstract and less tangible options with complex interactions are theoretically possible, yet this method is not designed to operate at that level. The approach is therefore limited in its ability to account for the influence of wider off-farm and non-farm effects on agricultural choices or preferences for different livelihood portfolios and lifestyles.

Traditional ethnography is one successful method that takes a more inductive reasoning approach to the further exploration of informal observations and anecdotes in order to form conclusions. A research method originating in anthropology, this is based mainly on long-term participant observation alongside qualitative methods and conversational analysis to understand the thick descriptions of people and culture (Geertz, 1994). The main intent behind ethnographic work is usually to look at things from the perspectives of people and everyday experiences, offering multiple perspectives rather than a reductionist or essentialist summary of a group.

However, not only does traditional ethnographic research require an abundance of time and resources, but fieldwork in the past has often restricted all observations to a single, local geographical site, as defined by a researcher. The problem with this is that as globalization has made the world appear noticeably smaller, it also has become far more visibly complex. Ethnography has been criticized for its lack of scalability and so new ways of understanding the relationship between the researcher and the participant became necessary for the discipline to adapt to this changing world.

To counter these methodological criticisms, many contemporary anthropologists became concerned with widening the scope of traditional geographically defined fieldwork, where the local conditions are the sole focus of investigations. The concept of multisited ethnography (Marcus, 1995) was introduced during the 'reflexive turn' in anthropology (Clifford and Marcus, 1986). This 'turn' entailed a large-scale interrogation of what constitutes 'knowledge' in ethnographic endeavours and multisited ethnography involved a greater interdisciplinary focus in its method, allowing for research to be conducted across multiple locations and times (Marcus, 1995).

Although there have been advances in scaling traditional ethnography to really understand the complexity of agricultural aspirations, a more rigorous and reflexive approach is required to remove a layer of expert interpretation or researcher bias (Fairhead and Leach, 1995) in data capture. Indeed, one of the main criticisms of ethnographic work, and indeed qualitative approaches in general, is that of research bias, as narratives and anecdotes from participants are filtered through certain research questions deemed important by the research team. More contemporary anthropological thoughts understand that local observations can never be considered in a reductionist manner and must instead consider more global, social, political and economic processes that influence not only the site of research but also the researcher parameters of possibility (Ong and Collier, 2008). With this in mind, it is argued here that gathering first-person narratives and providing a space for *self-signification* (where participants interpret their own texts) may be a promising approach to understanding the aspirations of rural households and how this may (or may not) relate to decision-making, and if so, in what ways. What this could mean is the development of more targeted and appropriate agricultural technologies along with information translated and relevant to contextual needs.

Against this background, we propose distributed ethnography (Snowden, 2010) as a novel yet well-established approach to explore the complexity of people's aspirations at large scale. This shift requires changing the traditional definition of a field site to incorporate more epistemological and ontological considerations, 'where field sites are located in technoscientific artefacts as opposed to geographical locations' (Bigras, 2012, p. 1). An example of this approach is the SenseMaker^{2} software (SenseMaker® Collector v3.0 and SenseMaker® Explorer v2.5b) (Cognitive Edge, 2014) that does not restrict research to a geographically located event or artificial experiment but looks to create human sensor networks to probe situations in order to respond appropriately. A key concept within distributed ethnography is the realization that linear causality is problematic. Instead of simple cause-and-effect relationships, human behaviour is affected by a variety of interacting elements that ebb and flow (Snowden, 2010). With this approach, respondents can contribute stories in their own contexts, in their own time and place, often facilitated using phones, laptops or other electronic devices. As case studies show (Cognitive Edge, 2014), the resulting metadata allows researchers to explore patterns of meaning over time and compare stories submitted by citizens all over the globe, without their own time and resources being spread thinly across areas where they hold little insider knowledge. When applying the SenseMaker software, the power of interpretation is at the level of the subject; it is the respondent who provides the data and signifies what it means, rather than the data being mediated by experts. This method is believed to have advantages over traditional experimental methods where people 'gift and game' as they try to figure out what the researcher wants from them and

perhaps manipulate their responses for their own ends. 'Children of the World', a project that gave birth to the concept of 'distributed ethnography', had young teenagers of schoolgoing age being trained in ethnographic techniques before collecting stories from three generations – theirs, their parents' and their grandparents' – about their community's defining narratives. This allowed researchers to effectively map an attitudinal landscape of that community's belief systems through their own narratives and work with them to make sense of their own narratives.

> SenseMaker has been shown to be uniquely positioned as a tool to investigate the deep human processes of decision-making. Specifically, it has recently been used to gain insights into the influence of non-conscious human processes on the perception of complex adaptive patterns. This highlights its immediate relevance for the research and development into the often-hidden human factors influencing project and organization successes across many fields (Polk, 2017). The key to weak signal detection is a software research tool that can provide real-time fast feedback loops between decision makers and the originating data without filtering. In the area of agriculture for rural development, there have been early attempts to utilize SenseMaker. Jenal (2016) outlined how people perceived interventions and the resulting progress and what has been the main driver of change along the process. While here SenseMaker has been used as a monitoring and evaluation tool, it clearly highlights how this method can bring non-conscious processes to light and make them accessible and actionable as shown by Polk (2017). Upcoming SenseMaker work in the agricultural and development sectors includes a project commissioned by the International Union for Conservation of Nature and Uganda's Ministry of Water and Environment and Climate Change Department to explore stakeholders' perspectives of land use management.

Complexity of aspiration-based choices

Understanding household aspirations enables the design of interventions that are better able to suit the needs of the rural population to move towards achieving their longer term goals. However, the innate biases that humans project while making decisions matter a great deal (Kahneman, 2011). These biases mediate the choices households make while trying to move towards their aspired state. Humans have psychological blind spots: biases in their perception that compel us to neglect unexpected events happening within our environment (Wiseman, 2011). This occurs not only in naive observers participating in an unfamiliar task (Simons and Chabris, 1999) but also in highly specialized experts (Drew et al., 2013). As such, humans are subject to 'bounded rationality' (Kahneman, 2003; Simon, 1957). When confronted with a complex or uncertain scenario, people do not process all available information to make the 'optimal' choice that maximizes utility. Instead, people use heuristics ('rules of thumb') and are subject to certain known psychological biases that cause them to deviate from the optimal outcome (Daminger et al., 2015; Thaler, 1999; Thaler and Sunstein, 2008). Within a rural farming household, there are a multitude of variables that influence decision-making and behaviour that make any analysis and prediction even more complex.

The World Development Report 2015 (World Bank, 2014) summarized these insights in three fundamental principles of decision-making unaccounted for by conventional economic theories: (i) people make quick automatic decisions operating within a 'satisficing' rather than optimizing model, (ii) social norms influence choices and (iii) historical learnings and cultural beliefs shape perspectives. Automatic decisions respond to emotional associations, out of habit and relying on mental heuristics. This exclusion of information can manifest in present-focused choices (e.g. spending rather than saving), self-defeating behaviour (e.g. not adhering to HIV medication), incongruous actions (e.g. funding consumption with debt while holding savings) and erroneous decision-making (e.g. perceiving a default savings rate offered to be a recommendation of the optimal rate). Social constructs such as norms and beliefs about their environment also strongly guide people in their decision-making, together with unwritten codes of conduct and the behaviours exhibited by others around them (Dolan et al., 2012). Learned cultural beliefs and perceptions can influence people's behaviour in fairly predictable ways. In essence, people take decisions with reference to others. The power of social norms and social networks to guide individual behaviours has long been established (see e.g. Kahneman and Miller, 1986) and is now being harnessed to good effect in the developing world (see e.g. Datta et al., 2014).

All three fundamental principles of decision-making operate unconsciously and in part explain observed deviations from the (conventional economic) optimal outcome as well as the gap between individuals' stated intentions and actual behaviour. Moreover, poor and food-insecure people are at greater risk of succumbing to such cognitive biases and their adverse effects because of the heightened cognitive strain associated with their impoverished situation (e.g. Hadley et al., 2008; Haushofer and Fehr, 2014). Indeed, conventional development efforts may exacerbate the adverse impact of poverty on people's cognitive processing. By offering overly complex solutions and knowledge, development organizations may, albeit unintentionally, tax the cognitive resources and mental 'bandwidth' that individuals have available (Daminger et al., 2015). All these psychological processes will influence the pursuit and formation of aspirations and are likely to result in non-linear pathways from the current status towards the aspired goal.

Herd behaviours and norms also guide investment decisions: whether or not to invest in, for example, a new tomato cooperative is dependent not only on expected profits but also on the social visibility of the cooperative. The wider adoption of new technologies is influenced by how many other farmers are already using it, with a slow spread at the start and increasing speed of adoption with time (Rogers, 2003). Moreover, there is a strong tendency to stick with status quo technologies when faced with multiple competing and potentially complex choice options. Mental models learned from historical, social and political structures also appear to manifest in an ingrained belief about

the limitations of the 'common man' to improve their farming-related circumstances (McCown et al., 2012). This has clear implications not only for the aspirations themselves but also for the perceived available pathways towards their achievements. If the options of advancing their farming enterprise are limited, they are more likely to invest in other income options. In this situation, a demonstration of upgrading pathways under different circumstances could also broaden the perceived set of choices and thereby change this perception.

Behavioural science sheds new light on why so many observed behaviours – investment, savings, consumption and so on – deviate from standard rational choice models and offers new ways of approaching the design of interventions (World Bank, 2014). However, even the behavioural focus of the World Development Report 2015 did not overcome the problem of assumptions around what it is that households aspire to. In their examples around agriculture, the underlying research problem is still the observed 'underinvestment in/underadoption of' modern technology (World Bank, 2014: 136). The label of 'underadoption' is still purely based on objective economic returns rather than a more thorough investigation of the underlying reasons for this limited spread. The idea that not all rural households see agriculture as their most attractive livelihood option is not considered. Many of the recent applications of behavioural science in agriculture (e.g. Duflo et al., 2009; Shujaz, 2016; Verkaart et al., 2018) hint at some explanations for the choices leading to 'underadoption' of technologies but they did not explore other possibly more strategic and fundamental drivers of these choices. Aspirations offer one potential explanation. Verkaart et al. (2018) built on a comprehensive household survey to identify distinct income portfolios across agricultural and non-agricultural endeavours to then compare the current status from their aspirations for the future along the main income streams. While the vast majority had immediate investment plans related to their agricultural portfolio by expanding livestock operations or improving their cropping system, the longer term perspective on agriculture was less favourable. More than 90% of the 684 farming households in two Kenyan districts said that they did not want their children to be farmers, while a nationwide survey of young people showed that most of them did not want to be farmers either (Shujaz, 2016). This highlights the clear disconnect between the agriculture-for-development sector and the views of these people who are in the centre of many programmes. However, it has to be highlighted that both these studies relied on direct questioning of future plans and directions which does not necessarily reflect the more non-conscious mental processes involved. Additionally, it is difficult to judge the realism of the stated aspirations and the perceived timeline of these plans.

Implications for agricultural research and conclusions

Policies, interventions, services and products developed around a more accurate understanding of human psychology and the cognitive processes involved in decision-making can lead to greater success and impact at an individual and societal level (Spencer et al., 2015). However, these effects can be short-lived (e.g. Duflo et al., 2009) even after accounting for the various biases under which human choices are made. Researchers must take a step back and revisit the theoretical advances made in the 1990s with the debate around livelihood diversification in order to make progress in this area. Until we understand better the more fundamental drivers behind household behaviour, that is, their aspirations and livelihood strategies, researchers will not be able to support their choices through technologies and dissemination approaches. Once the development community understands the underlying attitudes and resulting aspirations, rural development projects in agriculture and beyond could benefit from a more targeted, and thus more efficient, project design. Focusing on the groups where contributions are most valuable and are likely to be effective, appreciated and adopted has the potential to fast-track development efforts.

We believe that although most households in rural areas are engaged in farming to at least some extent, many of these households do not aspire to grow this part of their income portfolio but focus on other income sources. For agricultural research that is tasked with sustainably increasing global food production, food security and incomes for farming households, this would imply that the focus should mainly be on households that really aspire to farming. For these, we can provide optimization technologies and advice that could, if adopted, lead these farming households to more sustainable and profitable farming practices. When pitched to address the aspirations of these households, we are likely to see increased response rates. For example, technologies that are designed and communicated to improve soil quality – and so have outcomes in the medium and long term – are more likely to be taken up by households that aspire to farming than by households hoping to concentrate on off-farm or non-farm activities or even to exit farming altogether. Rural households that farm but that do not prioritize farming above other elements of their livelihood portfolio can also benefit from research, albeit for different reasons. For those where agriculture is predominantly a safety net, technologies that deliver stable returns using limited inputs would be attractive. In contrast, households that view agriculture as a generator of capital for investment elsewhere would probably value technologies that require medium levels of inputs leading to medium-to-high returns and might be willing to tolerate higher levels of risk. The diversity of aspirations of the rural households has clear implications for communication approaches that must become more tailored to these groups. Supporting self-selection into the most appropriate choices through providing the information these groups seek and guiding them through the channels they are most comfortable with will result in improved targeting (Verkaart et al., 2018).

While there has been encouraging progress in behavioural economics and some successes have been shown, there is limited understanding of aspirations and their

influence on choices. We need to widen the investigative boundaries and consider the full range of options (perceived or real) that rural households have to make a living. Aspirations are multidimensional, but to some degree non-conscious, elements of livelihood strategies but are often somewhat intangible so we require innovative ways of understanding them, making them accessible and actionable. Therefore, we are proposing to explore these in more detail.

At this point in time, we do not yet have sufficient data to test the link between aspirations and livelihood choices or develop hypotheses to test. Rather we seek initially to increase our understanding of how to capture aspirations without the possibly confounding effects of 'gaming' by respondents and of researchers' biases in interpretation. Only then can we formulate the most appropriate research questions and hypotheses to test.

While we acknowledge that the degree to which aspirations influence short- and medium-term decisions is not yet fully understood, evidence suggests that they do play a role. The task ahead for researchers is therefore twofold. First, implement what is known and consider aspirations more prominently when targeting agricultural technologies. Second, invest more resources to answer the most important questions around the role aspirations play across ecologies, gender, age groups and political economies. Towards both ends, the ability to explore aspirations at scale with much better methods offers great opportunities for both agricultural researchers and development practitioners. We, therefore, encourage inter- and transdisciplinary research into the complexity of human behaviour.

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Notes

1. The CGIAR describes itself as a 'global research partnership for a food-secure future. CGIAR science is dedicated to reducing poverty, enhancing food and nutrition security and improving natural resources and ecosystem services. Its research is carried out by 15 CGIAR centres' (see cgiar.org/about-us/).
2. SenseMaker is registered trademark.

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