



The Alliance Approach to Innovation: Agro-ecological innovations, Alliance, and Agency

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ABSTRACT

Agro-ecological innovations aim at promoting sustainable agricultural practices that have long term benefits. However, farmers rarely adopt beneficial innovations in agro-ecology despite expressing an understanding of the benefits and a desire to do so. It has been argued that the farmers lack sufficient knowledge to implement complex innovations. We believe that in many cases such knowledge is necessary, but is ultimately insufficient for complex innovation adoption. We argue that in addition to knowledge and a desire to adopt an innovation, many farmers require a collaborative relation with an ally. We call this method the Alliance Approach to innovation. This approach is modeled after the therapeutic Alliance Approach at work in cognitive and behavioral sciences. We argue that using the Alliance Approach will not only prove effective in helping farmers adopt complex agro-ecology innovations, but also a better fit for the human centered development of capability approach human development, as it is likely to enhance both the well-being and agency of the farmers.

Keywords: Agency, Agro-ecology, Alliance Approach, Capability Approach, Human Dignity, Innovation, Soft Paternalism.

RÉSUMÉ

Les innovations agro-écologiques visent à promouvoir des pratiques agricoles soutenables à long terme. Cependant, les agriculteurs éprouvent souvent des difficultés à les adopter malgré leur sensibilisation aux enjeux environnementaux et à leur désir de s'engager dans cette voie. Le manque de connaissances de la part de l'agriculteur a souvent été avancé à cet égard pour l'adoption d'innovations complexes. Nous estimons que dans de nombreux cas, une telle connaissance est effectivement non seulement nécessaire mais qu'elle implique surtout un rapport collaboratif avec un allié. Nous appelons cette démarche en faveur de l'innovation l'approche par l'Alliance. L'approche par l'Alliance trouve ses fondements théoriques et pratiques dans les sciences cognitives et comportementales et elle s'exprime dans l'alliance thérapeutique. Nous défendons l'idée que l'application des principes d'une approche par l'Alliance permettra non seulement aux agriculteurs de s'engager dans des démarches agro-écologiques complexes, mais que cette approche est particulièrement adaptée au développement centré sur la personne de l'approche par les capacités puisqu'elle favorise à la fois le bien-être et l'agencéité des agriculteurs.

Mots-clés : Agencéité, Agro-écologie, Alliance, Capabilités, Dignité humaine, Innovation, *Soft paternalism*.

JEL classification: D63, D74, O13

INTRODUCTION

Agro-ecological innovations aim at promoting sustainable agricultural practices that have long term benefits. It is clear that adoption of these innovations is of critical importance when one considers the reality of global climate change, environmental degradation, and human health. However, agro-ecological innovations require specific forms of knowledge which differ from innovations based on agro-chemical inputs. Agro-chemical inputs use codified, and standardized forms of knowledge which improve their diffusion among farmers but which have a strong detrimental impact on environmental resources and human health. Agro-ecological innovations are based on tacit or local knowledge from the farmer, interacting strongly with the local environment which improve the sustainability of the farm but which impedes large scale diffusion. As stated by Morgan and Murdoch (2002) farmers need to become knowing agents again and rediscover their environmental system in which they farm. In many cases such local or tacit knowledge may be necessary, but is ultimately insufficient for a knowledge intensive innovation adoption process. In the current paper we argue that in addition to knowledge and a desire to adopt an innovation, many farmers require an ally. We call this method the Alliance Approach to Innovation (AAI). This approach is modeled after the Working Alliance at work in behavioral and cognitive sciences. We argue that using the Alliance Approach will not only prove effective in helping farmers adopt complex agro-ecological innovations (and in turn supporting sustainable development), but that it also provides a better fit for the human centered development of capability approach in human development, as it is likely to enhance both the well-being and agency of the farmers.

1. THE AGRO-ECOLOGICAL INNOVATION AND KNOWLEDGE

The conventional agricultural sector developed after the Second World War relies on an intensive use of agro-chemical inputs in large mechanized plantations. This system is reaching its limits in yields and poses serious threats to the environment and human health. Agro-chemical inputs not only generate environmental degradation but they pose a dangerous threat for human health. Prolonged exposure to pesticides has been associated with non-Hodgkin's lymphoma, leukemia, cardiopulmonary disorders, neurological and hematological symptoms and skin diseases (Inserm, 2013). The conventional agricultural sector and farmers need to change in the face of problems caused by anthropogenic greenhouse gas emissions affecting climate change and the expected decline of crop yields (FAO, 2014; Vermeulen, 2014).

The agro-ecological transition offers a way to reduce the environmental and climatic impact of agriculture (Duru *et al.*, 2015). The transition consists in moving from a system heavily relying on agro-chemical inputs to a system with a low dependence on external inputs. Agro-ecology can be defined as the application of ecological concepts and principles to the design and management of sustainable agricultural systems (Gliessman, 1992). Agro-ecological practices rely on agro-ecological innovations which aim to reduce the use of agro-chemical inputs (soil conservation practices, biomass recycling, crop-livestock integration, pollination,

natural pest control, agroforestry, water management, cover crops and rotations, *etc.*). Such agro-ecological innovations are based on the following principles: preserving the biomass, soil conservation, energy efficiency, biodiversity, and biological interactions (Uphoff, 2002).

The different contexts and systems in which agro-chemical inputs and agro-ecological innovations evolve imply different forms of knowledge and therefore different form of innovation adoption processes. Agro-chemical inputs evolve in industrialized forms of agricultural production; they require codified knowledge, which is explicit, standardized and easily transferable. Agro-chemical inputs require a particular dispersal of knowledge: standardization which ensues as large firms disseminate an “*internationally recognized matrix of rules*” while the technologies sold by such firms require “*abstract, codified and reproducible... representations*” in order to move from locale to locale (Storper, 1996, p. 263 & 264).

Agro-ecological innovations evolve in small scale agricultural systems, strongly connected to the pedo-climatic environments. They are based on tacit or local knowledge. Tacit knowledge has been defined simply but effectively as “*we can know more than we can tell*” (Polanyi, 1966, cited by Morgan and Murdoch, 2000). In contrast to codified knowledge, tacit knowledge is often personal and context-dependent, and as such, it is difficult if not impossible to communicate other than through personal interaction in a context of shared experiences, and this seems to set a premium on physical (as opposed to virtual) proximity for transactions that involve a strong tacit dimension (Morgan and Murdoch, 2000). Tacit or local knowledge which emerges in a rather unplanned and unforeseeable fashion as bounded actors evolve ways of doing things in local situations which are context dependent’ (Morgan and Murdoch, 2000, p. 161).

This distinction between standardized or codified and tacit or negotiable knowledge forms focuses our attention on the various forms of “coercion” and “co-operation” which determine both the links between economic entities and the ability of those entities to innovate and acquire knowledge’ (Morgan and Murdoch, 2000, p. 161). Codified or standard knowledge reduce the need for interpersonal or collective interactions. When knowledge cannot be codified or standardized, when the farmer needs to be a knowing agent as stated by Morgan and Murdoch (2000) in the case of the organic chain, then interpersonal or collective interactions gain in importance.

The importance of local or tacit knowledge requires a farmer to become a knowing agent again. This is because sustainable agricultural systems are not one size fits all, but instead often require specific local knowledge. The complexity of the application of ecological concepts and principles to the design and management of sustainable agricultural systems requires new forms of knowledge, skills and also specific ways of transferring such knowledge. Interpersonal relations between extension officers, researchers and farmers need to be analyzed in detail.

2. THE ALLIANCE APPROACH TO INNOVATION

The cognitive and behavioral theories offer powerful tools to understand the processes of change in human behavior and interpersonal relations. The techniques in cognitive and behavioral theories are described in great detail in the therapeutic studies but we believe that

their practical significance extends beyond healthcare. These techniques can be adapted and applied in fields other than medicine. However, it must be noted that like other tools these techniques can be used to serve both purposes we advocate and purposes we reject. In other words, we are not simply advocating the adoption of a method; we are advocating the adoption of a method used to good ends.

2.1. The Importance of Interpersonal Relations

There is a large literature concerning the various methods of innovation adoption and innovation diffusion within agro-ecology. There is a smaller literature on interpersonal relations concerning innovation adoption and, more broadly speaking, the processes of change at an individual level. The importance of interpersonal relations is often mentioned explicitly in discussions of participatory approaches and innovation platforms; however they are rarely described in detail and the interpersonal relations are rarely, if ever, explicitly illustrated.

For example, the purpose of an innovation adoption process from an end-user perspective is basically to change the user's attitude towards the proposed innovation. Different explicit or implicit considerations of the end-user can be identified in the literature concerning innovation adoption. Let's first consider two examples both aiming at changing human behavior, but using implicitly cognitive and behavioral theories for different purposes.

A first example of an innovation adaptation process is one in which the end-user is "*persuaded*" into changing his or her behavior. We call this method the persuasion approach. This persuasion stage in the standard theory of innovation diffusion is based on the perceived characteristics of the innovation by the end-user and is massively used in marketing strategies (Rogers, 2003). The decision to adopt or to reject an innovation is not the terminal stage of the innovation decision process. The last stage is the confirmation stage. At the confirmation stage, the person seeks reinforcement for the innovation decision already made, and may reverse this decision if exposed to conflicting messages about the innovation (Rogers, 2003). For example dissonance may result in rejecting the innovation after having adopting it. Dissonance is an internal disequilibrium, an uncomfortable state of mind that an individual seeks to reduce or to eliminate. A dissonant person is motivated to reduce this condition by changing his or her knowledge, attitude or actions (Festinger, 1957). The standard theory of innovation diffusion describes the change agent roles to persuade the end-user to adopt an innovation by using the following steps: develop a need for change, establish an information relationship, diagnose the problems, create intent to change in the end-user, translate intent into action, stabilize adoption and prevent rejection, and terminate the relationship.

A second example is that an end-user can be "*shaped*" in its choices with signals affecting the user's perceptions in the direction which is aimed. We call this method the shaping approach. The World Development Report of the World Bank entitled "*Mind, Society, and Behavior*", suggest that "*governments should be in the business of shaping individual choices*" (WDR, 2015 p. 20). The approach is based on three principles: automatic thinking, thinking socially, and thinking with mental models. Such an approach is based on the idea that paying attention to how humans think (the processes of mind) and how history and

context shape thinking (the influence of society) can improve the design and implementation of development policies and interventions that target human choice and action (behavior).

As the two examples above reveal, techniques in cognitive and behavioral theories can be used to persuade a person or to shape mass behavior. Many Randomized Control Trials now directly derived their research from the fields of cognitive and behavioral theories (Duflo *et al.*, 2011). In both the persuasion approach and the shaping approach, the relationship between the change agent and the end-user is unidirectional and paternalistic. That is, information comes from the change agent to the user, but rarely from the end-user to the change agent. While both approaches are paternalistic in the sense that they seek to control the end-user (in order to enhance the end-user's well-being), the "shaping" approach is often called "*soft paternalism*" (Sunstein, 2014). Paternalistic approaches typically fail to treat the end-user as an agent who reflects on the good and makes decisions that influence the world in accordance with authentic personal values. The relationship between the change agent and the person does not exist through direct contact. The issue is not to put into questions the ends and the best intentions of such approaches but to highlight how the same tools (cognitive and behavioral theories) can serve different purposes or policies and the underlying assumptions they pose to qualify the person.

2.2. Alliance Approach to Innovation

The cognitive and behavioral theories focused on within the Alliance Approach provide an interesting perspective to tackle the challenges posed by knowledge intensive innovations and innovations where interpersonal relations have a central place. The Alliance Approach directly derives from the therapeutic alliance in the cognitive and behavioral theories developed in the fields of medicine. The Alliance Approach is a central concept in cognitive and behavioral theories because the literature review in therapeutic studies shows that it is not the therapeutic method or technique which determines the success of a therapeutic process but the therapeutic alliance, that is, the collaborative relation between the patient and the therapist (Horwath and Bedi, 2002; Martin *et al.*, 2000). As Luborsky *et al.* (1975) mentioned concerning the best therapeutic methods, "*Everyone has won and all must have gold medals*". In other words, many therapeutic methods have been proven effective when the patient and the therapist related well to one another. We believe the same holds true for many apparently competing methods or approaches in the fields of innovation adoption and diffusion: what matters is not just the perfect knowledge of the method, but how the interpersonal relations are constructed and maintained over the course of the project. The collaborative relation underlies the mechanism of change in a person rather than the prescription of a technique.

A therapeutic alliance is the mutual collaboration, partnership between the patient and the therapist with the aim of achieving fixed objectives (Bioy and Bachelart, 2010). The Alliance Approach finds its roots in the Freudian analytical research and the relations between a patient and his therapist. The Alliance Approach differs from transference in the Freudian approach as it is mainly a "*real relation*" rooted in the reality and extracting from reality its expressions and manifestations (Greenson, 1967). Without such an alliance, the collaborative process cannot take place. The alliance is based on a sense of working together in a joint struggle against what is impeding the client (Safran *et al.*, 2009) or as an empirical collaboration relation similar to two scholars working actively together over a problem

(Alford and Beck, 1998). The alliance involves the patient's faith in the therapeutic process itself (Safran *et al.*, 2009). The importance of such an approach has been largely demonstrated in the fields of cognitive and behavioral theories (Cungi, 2011).

2.3. The Collaborative Relation

The collaborative relation is a central component of the Alliance Approach between two or more persons. When two people meet, relational factors are put in the first place: the two people observe each other, introduce themselves differently, in a seducing or defensive attitude. The same is true between a therapist and its patient, or between a farmer and an extension officer. Each one evaluates the other to know the person and adapt accordingly his or her behavior. A minimal relationship, a psychological contact, must exist (Rogers, 1957). Let's apply this approach outside the fields of therapy and consider two persons, say an agronomist (or an extension officer) and a farmer. The fields of the farmer face pest attacks and his or her goal is to reduce significantly the use of agro-chemical inputs. The farmer is motivated by the fact that he or she wants to reduce environmental degradation and health hazards. The farmer asks the agronomist (or the extension officer) for help in order to change the practices to reach this goal. The collaborative relation is that of the agronomist and the farmer working together to solve a problem. This is the first stage of the process. If the collaborative relation does not occur, then the process of change does not start, and if it is lost, then the process of change stops. As long as the relational factors are in the foreground, then the process can start and proceed with the acknowledgement that resistance (passive negative reaction) and reactance (negative active reaction) usually dominate in the initial phase of the process of change.

2.4. The Four Components of the Collaborative Relation

Four components in a collaborative relation are recognized as necessary from the agronomist perspective: empathy, authenticity, warmth, and, professionalism (Cungi, 2011).

- **Empathy** is the capacity of the agronomist to understand, to comprehend the reality and position in the farmer's perspective. Real observable facts are more important than the interpretations. Empathy requires an unconditional positive regard from the agronomist towards the farmer (Rogers, 1957). The motivational interview can be useful here. It consists in recontextualizing, reformulating, resuming, and reinforcing the problems in order to clarify the needs for change (Miller and Rollnick, 2012).
- **Authenticity** is the capacity of the agronomist to feel comfortable in the process, including his or her own emotions, feelings, thoughts, even his or her own uneasiness with the farmer. Authenticity leads to authentic trust, a decisive factor for success.

- **Warmth** is to consider the farmer as warm. This stage generally does not pose any problem and a minimum of empathy may lead to such warmth. However, if warmth is not achieved and maintained, then the process is in jeopardy.
- **Professionalism** is a last and major factor because the farmer not only expects a good collaboration but solutions to his or her problems. The “patients” (in our case the farmer) can be more considered as clients than patients, because the notion of client implies expectations can be an active agent of change (Rogers, 1957). We suggest the language of “partners” on a common project. As we believe that an “agronomist-client” relationship still sounds like the relationship is limited to an impersonal service or transaction.

Professionalism requires that both members have the skills to form the alliance, a capacity to conceptualize problems, apply technics and estimate the consequences or the impacts. For example, the professional aspect of the process requires the capacity to install an alliance, collect the useful and pertinent information, adopt a functional analysis of the problems, know how to apply the methods, and the ability to estimate the impacts in the short, medium, and long term.

2.5. Alliance and the Functioning Analysis

The functioning analysis is a diagnosis approach in the cognitive and behavioral theories. It consists in analyzing and explaining the nature and causes of a problem, and therefore to analyze and explain the functioning of a person in his or her specific context. A complete listing of functioning analysis approaches is beyond the scope of this paper¹. As an example, the Kanfer and Saslow (1969) approach consists in 3 objectives: 1) determining which behaviors need to change, 2) determine in which conditions they were acquired, and 3) determine which current factors maintain them. The purpose of the functioning analysis is a sustainable change of problematic behaviors using joint and coordinated actions on all internal and external variables. Functioning analysis is referenced implicitly by the World Bank’s 2015 World Development Report when it mentions “automatic thinking.”

2.6. Alliance and the Bond

The successful implementation of the four components of the collaboration relation is to lead to trusting relationships, or put differently, to create a bond between the persons. The bond leads to mutual and authentic trust, confidence in the process, acceptance, undistorted perceptions, and respect (Greenson, 1967 in Safran). The collaboration, the pact, between the two persons is recognized as a decisive factor of success for a process of change. It involves an authentic and transparent relationship between the two persons. The objective is therefore for the agronomist to install, develop, and maintain a collaborative relation. Specific technics

¹ The reader may refer to Cungi (2011) for a presentation of the most popular functioning analysis approaches.

to install an alliance are necessary. Ignoring them may slow the process, reduce its impact or interrupt the process of change.

2.7. The Alliance Approach Framework

Bordin (1974) suggested that the alliance consists of 3 interdependent components: goals, tasks and bonds (Figure 1).

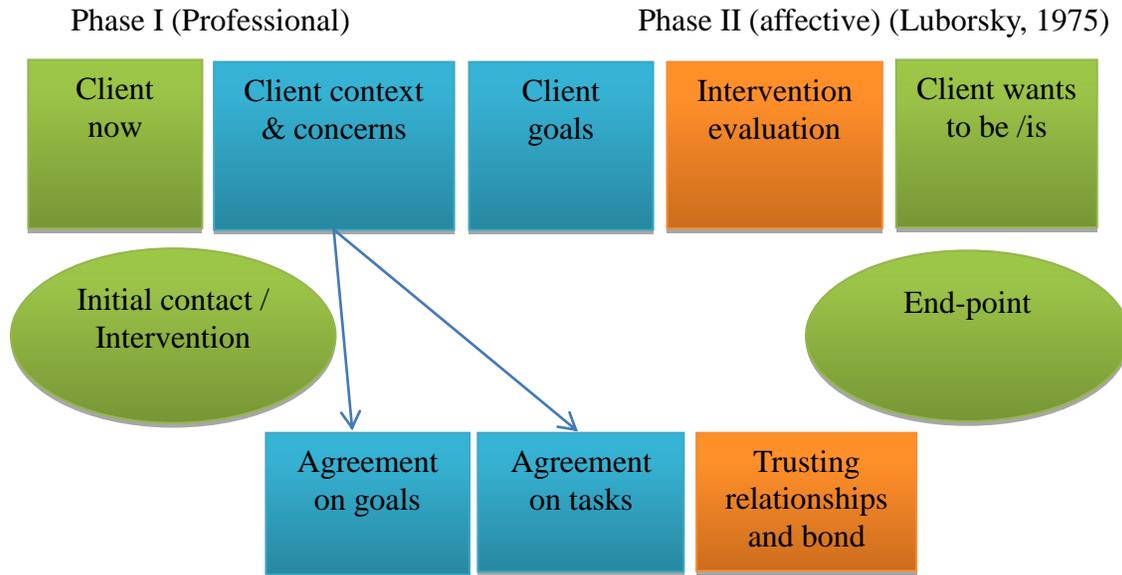
- The **goals** are the desired outcomes, which are the targets of the treatment. The goals show the direction, while the tasks give substance.
- The **tasks** refer to specific activities that the farmer and the agronomist will engage in over the course of treatment in order to facilitate the desired change.
- The **bond** refers to the affective quality of the farmer–agronomist relationship and includes feelings of mutual trust and respect, liking, and confidence. According to Bordin (1979, p.16) about the bond between a therapist and a patient, the bond “*grows out of their experience of association in a shared activity*”.

All three components of the alliance influence each other in an ongoing fashion during the course of treatment. That is, the ability to agree on goals and tasks of the process of change contributes to the farmer’s feelings of being understood and respected, and the sense of the mutual trust within the process of change dyad. In reverse, the positive feelings (the bond) allow the farmer and the agronomist to successfully negotiate the agreement on goals and tasks.

Luborsky (1975) identified two phases, a professional phase and an affective phase. The professional phase corresponds to the components of the collaborative relation (empathy, authenticity, warmth and professionalism). It requires a collaborative agreement on goals and tasks. If the professional phase is not successful, then the second, affective phase, is not possible. Within the affective phase of intervention, evaluation requires trusting relationships and a bond between the two (or more) persons.

The alliance process in a problem solving context has a beginning qualified as an initial contact between the two persons, and an end-point when the goals are achieved and the problem is solved, at least temporarily.

Figure 1. The working alliance framework.



References: Bordin (1979) in Safran *et al.* (2009)

2.8. Alliance and End-Point

The Alliance Approach explicitly recognizes an end-point of the process. When the goal between two or more persons is reached than the process is over. This end-point of the process implies that the client has reached his goal and that he is now what he wants or chooses to be. As we explain below, this end-point aspect of the Alliance Approach contrasts with the confirmation stage in standard theory of innovation diffusion (Rogers, 2003) and with the permanent renewing of consumer goods in the fields of marketing and dependency.

The confirmation stage in the standard theory of innovation diffusion is the last of the five stages of the innovation decision process (Rogers, 2003). The confirmation stage is when the person seeks the reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation (Rogers, 2003). Likewise, permanent renewing, is when change is a permanent marketing process and the person is induced to renew frequently the adoption of innovations. The person can also be induced to be shaped permanently by the government in order to make the desired choices (WDR, 2015).

The Alliance Approach is superior in its end-point aspect because it assumes that the person can and will achieve some form of independence after striving for and successfully achieving mastery of a process. This represents the end of the process, until a new need arises.

2.9. The Alliance Approach in Practice

From a pragmatic perspective, if the innovation is destined to have impacts on the field, then the Alliance Approach is pertinent as it is based on real observable facts and a functioning analysis. If the implication of an innovation is a change of cognitive and behavioral perceptions at an individual level, then the Alliance Approach provides the tools to help two or more persons to build a collaboration based on an agreement on goals and tasks, all based on trusting relationships. If the implication of an innovation is to improve the emancipation of the person at the end of the process, then the Alliance Approach is pertinent as it implies an end-point of a change process, an explicit analysis of the consequences (impacts), and the independence of the person. Finally, if an innovation implies both a professional and affective relationship, then the Alliance Approach is also relevant as it implies acknowledging the professional status of the persons and therefore their respective expectations.

As stated previously, when the farmer needs to be a knowing and participating agent in the case of the organic chain (Morgan and Murdoch, 2000), then interpersonal or collective interactions gain in importance. And as stated by Unger *et al.* (2011) about the richness of the learning environment, farmers, agents, need to be capable of learning pertinent knowledge which has a clear decisive relevance to the matter in hand. For example, extension officers play a key role interacting with farmers to accompany them in their farm management and evolution. However, it is also necessary that the extension officer has a relevant educational and learning background.

Negotiation constitutes a future field of research in the Alliance Approach in the fields of cognitive and behavioral theories but it also applies to complex innovations. When the farmer positions himself in its evolution and contributes to the methods, *i.e.*, becomes a change agent, he is then involved in the process through a personal engagement, especially through the assigned tasks. Such an implication of the farmer in the process may lead to a reformulation of the alliance as an ongoing process of intersubjective negotiation, that is, the negotiation of the respective needs of the two independent subjects (Safran *et al.*, 2009).

In this section of the paper we have explained *how* the Alliance Approach can help farmers change their behavior towards the adaptation of complex agro-ecological innovations thereby facilitating the adoption of the important and beneficial innovations. In the following section, we explain why extension officers, agronomists, farmers and others involved in agriculture should use the Alliance Approach as they transition to agro-ecological farming methods.

3. THE ALLIANCE APPROACH THROUGH A CAPABILITY APPROACH LENS

In the first part of this section we introduce the Capability Approach (CA) as a framework for evaluating progress within international development. We then explain how using the Alliance Approach within the innovation adaptation process is consistent with respecting and enhancing both the well-being and agency of the innovation user. We submit that Alliance Approach does a better job of respecting and promoting agency than persuasive alternatives like behavior-shaping, or nudging that tend to bypass deliberate decision making.

3.1. The Capability Approach

The Capability Approach was pioneered by economist Amartya Sen and philosopher Martha Nussbaum. Unlike other approaches to international development, which focus on economic development, the CA is a human centered approach to development. It holds that development is a process of expanding the real freedoms people enjoy. Within the CA normative evaluations take place in the theoretical space of substantive freedoms, or capabilities. Well-being is assessed not in terms of utility or income as in traditional approaches to economic development, but in terms of the various things one may value doing or being.

Within the capability approach *functionings* are the various doings and beings a person actually achieves. These functionings are not to be equated with the functionings of the functioning analysis discussed above. A difference between the functioning analysis and the functionings in the CA is that the former is about changing a problematic behavior while within the CA functionings are results or achievements. Functionings can be elementary, like the basic physical state of being well-nourished, or complex, like the social achievement of appearing in public without shame. *Capabilities* represent the various functionings a person is capable of achieving. In other words, a capability is a type of substantive freedom: the substantive freedom to achieve alternate functioning combinations, or lifestyles (Sen 1999). Thus, if A has capability X, then A has all the resources required for her to achieve X.

The CA recognizes both that (1) the resources required to acquire a given capability will likely be diverse in that include not just material resources, but also personal, social, political, legal, and many other types of resources as well; and that (2) human diversity means that the resources required by different people (A, B, and C) will often be different. For example, a person who has the capability to be well nourished not only has access to sufficient amounts of the right types of food, but also an adequate digestive system (no parasites), some knowledge of dietary needs (one cannot be well nourished from only soda and candy), the right psychological state (not suffering from anorexia), the right social state (in parts of India it is not socially permissible for women to eat until men have had their share), and so on. Moreover, given human diversity, the resources required for (A) an elderly man with a parasite who requires medication to have the capability of being well-nourished may be very different than the resources required for (B) a pregnant woman, and for (C) a six month old baby girl, to be well nourished. The upshot is that within the CA what it means to say that an individual has the capability to achieve functioning X, is that she has whatever resources are required to achieve X no matter how simple or elaborate the resources are and no matter how unique the needs of the individual.

The set of capabilities a person has reflects not only *what* she can achieve (for example, civic participation), but also *the extent to which* she can achieve it (from publicly expressing ideas, to voting, to organizing a political movement, to holding office). Thus, an individual's *capability set* represents the real opportunities a person has, or the various alternative lifestyles she is free to achieve. The CA recognizes the importance of an individual's freedom to choose to achieve certain functionings (and not others) from the set of various real opportunities. This freedom to choose between opportunities is the significant difference between the person who chooses to fast and the person who has no choice but to starve.

By focusing on capabilities, and not functionings, the CA prioritizes an individual's agency over predetermined general notions of her well-being. For example, although most would agree that other things being equal it is better to be well nourished than not, the CA does not dictate that achieving the functioning of being well nourished, that is actually being well nourished, is necessary for an individual not to be considered poor. What *is* important is that the person has the capability to be well nourished if she so chooses. In other words, the CA recognizes that a person may have good reasons to choose to fast even though doing so adversely affects their well-being. For example, one might choose to fast as part of religious observance, or in protest to human rights violations. Thus the CA values both well-being *and* agency.

Sen's discussion of agency extends beyond an individual's decision whether or not to achieve a certain functioning. Within the CA, individuals are not passive recipients of aid, but instead act as agents to bring about change in the world in accordance with their own values (Sen, 1999). Moreover, although we will not go into detail here, the CA can recognize degrees of agency, as well as collective vs. individual agency, and direct vs. indirect agency. (For a detailed and comparative account of agency within both Sen's and Nussbaum's versions of the CA see Keleher 2014). We believe that both the CA's ability to recognize the need for diverse resources in order to acquire a capability, and CA's focus on agency make the approach a useful lens for appreciating the value of the Alliance Approach in agro-economic adaptation.

3.2. Innovation, Alliance and Capability Approach

As explained above, the adoption of agro-economic innovations can often be difficult, even when individual users recognize the positive benefits of the innovation. Many have rightly recognized that education about the innovation is often a necessary resource for the adaptation. The result is that many agro-ecological interventions and outreach programs include an educational component when introducing innovations to farmers. However, in many cases, farmers still resist innovation adaptation despite having the knowledge and material resources required to do so.

Given that so many farmers with the necessary material resources and knowledge still fail to achieve the functioning of adopting beneficial innovations in spite of their own recognition of the benefits, we believe that many farmers still lack the capability to adopt the innovation. In the following discussion we will call an individual's capability to adopt an agro-ecological innovation, the capability to AAI. As explained above, if a farmer lacks the capability to AAI, it is because he or she lacks some sort of necessary resource for achieving the functioning of AAI. In other words, although material resources and knowledge may be necessary for AAI, they are not sufficient in many cases. Another resource is required for many to have the capability of AAI. In the remainder of this section we argue both (1) that in many cases the Alliance Approach can provide the missing necessary resource for the capability AAI, and (2) that the alliance is approach is superior to other possible strategies to help farmers achieve AAI.

As explained above (in the section on the Alliance Approach), there are a number of ways farmers might be led, or enabled, to adopt an innovation. In other words, there are a number

of ways in which a farmer might achieve AAI. We briefly considered both (1) the persuasion approach often employed in advertising in which individuals are conditioned into adopting innovations by repeated suggestions of the desirability of adopting the innovation, and (2) the shaping approach known as soft paternalism, or nudging, in which factors that might influence human behavior in a given situation are arranged in accordance with findings in human psychology in such a way that the desired behavior is most likely to result. We do not deny that either or both of these methods can be effective and at times even appropriate means at producing desirable results that enhance well-being. In other words, both the persuasion and shaping may provide the necessary resources to achieve the functioning AAI. However, unlike the other two approaches, the Alliance Approach strives to respect the agency of farmers. Those involved with alliance seek to establish the *capability* of AAI in a way that expands agency. We believe this promotion of agency, is morally significant because it is an act of respect of human dignity.

The Alliance Approach focuses first on the agency related task of identifying the shared goals of two (or more) people. In our case, this is the agro-ecologist(s) and the farmer(s). The relevant players all share the goal of facilitating the farmer's acquisition of capability AAI. Note that unlike the goal of the persuasion and nudging models, which is simply to change behavior, the goal of alliance is capability, not functioning. Like the CA itself, the alliance model would not support the behavioral change of adopting the innovation in a case where the farmer has good reason for electing not to adopt the innovation. At the heart of this approach is the relationship of trust and collaboration. Thus, the sort of relationship promoted by alliance is not unlike what Paul Farmer and other scholars and practitioners concerned with human dignity have called accompaniment (Farmer, 2004, 2011). In contrast, the persuasion and nudging models both seek to bypass agency often by appealing to a person's subconscious or other aspects of human psychology that do not engage a person's focus and awareness. Thus, it is because alliance is focused on the evaluative space of capabilities and enhancing agency that we believe it is a more human (dignity) centered, and therefore superior, approach to innovation adaptation.

There are at least two additional virtues of the Alliance Approach within human development. First, it may facilitate other capabilities that rely on developing a sense of trust and a working relationship with others as well. Because alliance, like the capability approach, reflects the Kantian ideal of treating humanity as an end within itself, and not a means only, it is most likely to be instrumentally valuable to other capabilities that enhance well-being, including Nussbaum's central capability of affiliation. Affiliation plays an "architectonic" role within her approach because it is a source of important abilities that are not only intrinsically valuable, but also instrumentally valuable to other central capabilities: these important abilities are self-respect and the ability to have healthy relationships with others (Nussbaum, 2000, 2011). A second additional virtue of using alliance with human development is that because it directly engages individuals as agents it is likely to raise consciousness in a way that mitigates and undermines adaptive preferences. Adaptive preferences occur when people, typically women and other marginalized individuals, form preferences in response to their impoverished circumstances that tend to perpetuate their own oppression and/or deprivation (Nussbaum, 2000; Khader, 2011). In other words, the Alliance Approach respects human dignity as it promotes human agency.

In this section we have shown that although other approaches to changing behavior might effectively result in the functioning of AAI and all of the well-being benefits that come with it, alliance respects the agency of farmers as those involved with the method seek to establish the capability of AAI in a way that respects and expands agency. In addition to respecting agency, alliance is more likely to contribute to the development of other important capabilities and to undermine adaptive preference. It is important to be clear that our position is not that nudging or the persuasion techniques should never be used to promote well-being, but rather that in agro-economic innovation adaptation, and probably many other areas, an Alliance approach is preferable because it seeks to engage the individual as an agent, and in doing so shows greater respect for human dignity.

CONCLUSION

This paper is concerned with the problem of facilitating the adoption of complex agro-ecological innovations that promise important benefits to global climate change, environmental degradation, and human health. Because such agro-ecological innovations require not only specific forms of knowledge, but also a transformation of attitudes, we suggest using techniques at work in behavioral and cognitive sciences designed to facilitate such adoptions. After briefly examining three models of transformation: the Persuasion Approach, the Shaping Approach, and the Alliance Approach, we propose that the Alliance Approach is superior. The superiority of the Alliance Approach lies in the fact that it is not only effective at transferring knowledge and transforming attitudes and thereby enhancing well-being, but it also promotes human agency. The virtues of Alliance Approach can be helpfully understood in the context of the Capability Approach to human development. Both approaches are focused on individuals as agents and as units of moral concern. As the CA makes clear, recognizing and promoting human agency is one important way to recognize and respect human dignity. Thus, the Alliance Approach is a powerful tool that can be used to effectively enable the adoption of complex beneficial agro-ecological innovations while respecting human dignity and furthering human development.

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