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ARTICLE

Going beyond efficiency: including altruistic motives in behavioral models for sustainability transitions to address sufficiency

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Sustainability transitions require altered individual behaviors. Policies aimed at changing people's consumption behavior are designed according to efficiency, consistency, and sufficiency principles. Taking into account shortcomings of the first two principles, this paper specifically addresses the sufficiency principle. Sufficiency policies are not very popular due to the fear that they may impede quality of life. This fear might be eased when highlighting the motivational side of sustainable behavior, such as the wish to care for future generations and the world's poor. This article uses the capability approach (CA), developed primarily by Nobel-laureate economist Amartya Sen (1987a) and philosopher Martha Nussbaum (1993, 2000), to a) include the differentiation between self- and other-oriented goals and behavior, b) build on its demonstrated success in assessing quality of life, and c) assess the sustainability of behavior and policies. These three facets make CA suitable to analyze the effectiveness of sufficiency policies on sustainability and quality of life. To better understand the motivational side of sustainable behavior, CA is here for the first time enriched through approaches from environmental psychology. This enables us to highlight the idea of intrinsic empowerment as a building block for sufficiency policies. We close the article by highlighting further avenues for research.

KEYWORDS: quality of life, sustainable development, social behavior, public policy

Introduction

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of "needs," in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs (WCED, 1987).

The most common definition of sustainable development (SD) is the one from the Brundtland Commission reproduced above, where the central terms are "needs" and "limitations" (WCED, 1987). Reinterpreting the fulfillment of *needs*, a decent quality of life is considered a central goal of SD (Rauschmayer et al. 2011; Di Gulio et al. 2012). To reach this goal, SD policies, addressed to governments, businesses, and individuals alike,[1] aim at improving quality of life by solving (global) environmental problems and social inequalities/inequities. Many contemporary scholars postulate a claim for intra- and intergenerational justice as the main motive behind the Brundtland conception of SD (Anand & Sen, 2000; Ott & Döhring, 2008; Christen & Schmitt, 2011; Schäpke, 2011).

Core sustainability strategies follow the principles of efficiency, consistency, and sufficiency (Grunwald & Kopfmüller, 2006). Traditional economic models emphasize increasing one's own well-being as the main motivation for action and mainly focus on efficiency improvements. These improvements would, for the individual consumer, ideally allow an increase in individual well-being through, for example, more consumption, while at the same time creating less environmental impact. Sustainability scientists have largely shown such approaches to be ineffective, due to rebound effects that offset or even overcompensate for efficiency gains (e.g.

[1] In this article, we focus on individuals, whose overall consumption has substantial social and ecological impacts (Reisch & Røpke, 2004; Jackson, 2005).

Jackson, 2009; Crompton, 2010; Santarius, 2012; Enquete-Commission, 2013; Schneidewind, 2013).

Consistency improvements aim at qualitative changes in production and consumption patterns by resource substitution and adaption to natural resource flows. Consistency aims to contribute to safeguarding spaces for growth of material flows, consumption, and the economy at large (Grunwald & Kopfmüller, 2006). Increasing one's own well-being would then harmonize with consuming different, innovative, and more environmentally friendly products. Nevertheless, innovations increasing consistency are still missing in a large number of fields, while other innovations, such as the sustainable harvesting of fish or wood, cannot be addressed by consistency attempts at all (Jackson, 2009; Stengel, 2011).

We assume that the effectiveness of efficiency or consistency improvements can be strengthened when accompanied by a more fundamental value shift. This includes strengthening altruistic motivations for changing behavior and, as a consequence, adopting sufficiency strategies as a focus on what is "really" relevant and needed for a good life such as limiting consumption by way of voluntary simplicity. Behavioral models that take account only of self-centered motivations cannot account for such change.

It is unclear, though, whether a sustainability ethos calls upon individuals to check their own everyday (consumption) behavior to be in line with the values of SD or whether it is in their role as citizens to push policy toward SD (Grunwald, 2010; 2011). In both roles, individual behavior can be termed sustainable when it contributes to SD and individuals may be motivated to act on either basis by their own interest or by altruistic considerations (Stern et al. 1999). To further understand how individual behavior can contribute to SD, it is helpful to differentiate among three different views on sustainable behavior:

- *Substantially*, one could consider behavior sustainable that in effect allows the world's poor and future generations to meet their needs by being able to realize a decent quality of life, no matter what motivates the respective behavior.
- *Intentionally*, one could consider only such behavior sustainable that is motivated by the wish to allow the world's poor and future generations to meet their needs and to realize a decent quality of life—rather independently of the behavioral effects.
- *Procedurally*, one could consider a behavior, or a set of connected behaviors, sustainable if the behavior itself is carried out in line with principles of sustainability, for example by establishing voting procedures on decisions concerning environmentally relevant infrastructure that are consistent with principles of inter- and intragenerational justice.[2]

We argue that it is useful to link the first and the second views to analyze different SD strategies. While efficiency strategies take the substantial view, sufficiency arguments, such as those prominent in contemporary degrowth debates, draw on both substantial *and* intentional definitions (Kallis, 2011). Efficiency strategies try to motivate substantial sustainable behavior only by interest in personal well-being, not necessarily questioning current and consumption-oriented definitions of well-being (Schneidewind, 2013). This omission of the intentional dimension of SD might be one possible reason for rebound effects occurring in the implementation of efficiency strategies (cf. Peters et al. 2012).

At the same time, many members of western societies do not adopt sufficiency-oriented consumption patterns easily. Various barriers related to quality of life impede this adoption including conventions, feared loss of convenience, or conflicts with common consumerist lifestyles (Stengel, 2011; cf. Fuhrer & Wölfing, 1997). An increased willingness to take responsibility and to bear the costs associated with sufficiency lifestyles seems to require a fundamental value shift toward an intentional view on SD. Individuals express this value shift by behaving prosocially and in accordance to altruistic values (Jackson, 2009; Stengel, 2011; cf. Boulanger 2010).[3]

There is ample evidence that nonconsumptive behavior and the well-being of others are important for one's own quality of life (e.g., Diener & Diener, 1995; Ura et al. 2012; Helliwell et al. 2013). Assuming that sufficiency strategies were selected merely for reasons of one's own well-being makes it difficult to explain why routines predicated on sufficiency practices have not yet been widely adopted (Alcott, 2008). Along these lines, we assume that people have the goal to care for others: policies designed with underlying models that do not account for those mo-

[2] For reasons of simplicity, we do not follow the strand of procedural SD here (cf., Leach et al. 2010 for an in-depth discussion).

[3] The orientation to act in coherence with the common good, even if it conflicts with individual interests, can be called altruism or pro-social behavior (Fuhrer & Wölfing, 1997). The terms "pro-social behavior", "pro-social values," and "altruism" have various definitions, which overlap to a large extent. Twenge et al. (2007) define pro-social behavior as "actions that benefit other people or society as a whole," while Lishner & Stocks (2008) define altruism as "a motivational state with the goal of increasing another's welfare." Scholars debate whether pro-social behavior and altruism lead to future benefits for the helper (e.g., Knickerbocker, 2003; Twenge et al. 2007). In this article, we look at altruistic motivations as sources for pro-social behavior, no matter whether there are future benefits to the actor or not.

tivations, or assume only self-interested motivations, strengthen the importance of bandwagon or free-rider effects that—in turn—decrease the likelihood of pro-social behavior (Molinsky et al. 2012). Models of individual (citizen or consumer) behavior that are meant to help assess all three—efficiency, consistency, and sufficiency strategies for SD—should therefore also account for altruistic sustainability motivations (Ingebrigtsen & Jacobsen, 2009). Policies based on models predicated on other-regarding goals may enhance people's freedom to behave sustainably, both intentionally *and* substantially.

It is unclear, though, which models can be used as a basis for integrating sufficiency strategies coherently into policy design and assessment. As a first shortcoming, while mainstream behavioral models, assuming a self-oriented motivation and based on well-being or utility maximization, can analyze efficiency or consistency strategies, the lack of models that include altruistic motivations hampers design and analysis of sufficiency strategies.[4]

Furthermore, sufficiency strategies need to be assessed and evaluated to show their effectiveness. This assessment needs to include both substantial sustainability impact as well as impact to quality of life, herewith addressing the main reason for nonadopting sufficiency strategies—the fear that sufficiency strategies might impede quality of life. In this context, psychological considerations of individual motivations to behave sustainably, such as self-centered or other-regarding motivations, once more become crucial (Kaufmann-Hayoz et al. 2010). Most current psychological models, though, do not fulfill the assessment requirement with regard to quality of life, which they do not link to behavioral analysis at a societal level (cf., for environmental psychology, Osbaldistan & Schott, 2012).

We suggest that to be able to analyze substantial and intentional views on SD with respect to personal behavior, a more explicit behavioral model is needed, a model that includes self-centered and altruistic motives as well as an ability to assess different impacts of changed behavior at a societal level, on the one hand with regard to quality of life, and, on the other hand, with respect to substantial sustainability. In this way, the model can be a basis for more holistic policy design and assessment.

The main aim of this article is to develop and discuss such a model that combines societal and psychological elements to facilitate discussions on sustainability transitions. In an effort to identify new models of sustainable behavior that are appropriate for policy analysis, we link psychological models with the capability approach (CA). CA has been primarily developed by Nobel-laureate economist Amartya Sen (1987a) and philosopher Martha Nussbaum (1993; 2000) as an alternative to understandings of human flourishing based on resource availability and well-being (Rauschmayer et al. 2011).

Capability, understood as the freedom to live a life one values or has reason to value, has become prominent in the discussion on human development. CA has been widely used to monitor societal achievements, and is particularly present in discussions pertaining to global intragenerational justice (e.g., UNDP, 2011). Understanding such freedom as the basic quality of life, CA offers a structure to better appreciate what individuals require to have this freedom.

In the following treatment we focus on the particularity that the standard assumptions of CA can account for the difference between self-interested and pro-social behavior.[5] At the same time, these assumptions can be extended by standard models from environmental psychology to explain differences in behavior when shifting to sufficiency policies for SD. On this basis, we can formulate recommendations for sustainability policies that are based on a model of individual behavior that is richer than typical models used for economic research and that is more oriented to public policy than most psychological research.

In this article, we develop and discuss such a model, so that SD policies can be designed and assessed in a more encompassing way. The journey that we pursue links several different issues. First, we elaborate the differences among efficiency, consistency, and sufficiency strategies for SD. We then introduce the concept of capabilities in the context of SD. Third, we enrich the capability concept by drawing on standard concepts from environmental psychology. Fourth, we sketch a model based on these links and then discuss the perspectives and limitations of combining these different concepts in one model. The aim here is to evaluate the degree to which it offers a promising approach for assessing and designing more encompassing SD strategies. The article closes with a summary and outlook.

[4] Peters et al. (2012) state "Most studies analyzing the rebound effect are based on neo-classical economic models and therefore ignore sociological and psychological aspects." They further develop a psychological approach to study rebounds, showing that enriched models can be functional for the evaluation of efficiency strategies as well.

[5] Egoistic and altruistic/pro-social aspects are also reflected in most basic reasons for action (Grisez et al. 1987), fundamental human needs (Max-Neef, 1991), or other such lists of what constitutes human flourishing or quality of life (see Alkire, 2002 for a comparison).

Sustainable Development: Efficiency, Consistency, and Sufficiency Strategies

We understand the main implications of SD, as defined by the Brundtland Commission, as the need for intra- and intergenerational justice on a global scale (WCED, 1987). To achieve these goals, production and consumption patterns have to change dramatically. Mainstream economic models of consumer and producer behavior are based on revealed preferences and focus on realizing *efficiency* principles. In light of this approach, sustainability strategies based on efficiency gains appear promising, insofar as they encourage the allocation of resources into production that enhances well-being. The aim behind propagating efficiency strategies (e.g., Lovins et al. 1998) is to create win-win situations, realizing growing personal well-being and a shift to SD at the same time. According to this approach, individual interests, values, and preferences do not have to change if the incentives are correctly determined. Such an efficiency-based approach either does not account for motivations or assumes that all actions can be explained by the motivation to maximize one's own well-being (for a discussion, see Kals & Russel, 2000). On the basis of an efficiency strategy, SD would come about without the individual actors having to develop empathy for other humans as a main motivation. With the distinction introduced above, substantially sustainable behavior would not require intentionally sustainable behavior.

Nevertheless, efficiency improvements (for example, in energy or material use) have to date been strongly challenged in their effectiveness due to rebound effects (e.g., Kleinhückelkotten, 2005; Hinterberger et al. 2009; Jackson, 2009; Crompton, 2010). The overall rebound can be defined as the amount of the efficiency improvement offset by the raise in demand caused by the very efficiency improvement (Mandeler & Alcott, 2011). Rebound effects occur at a personal or a systemic level and are analyzed focusing at psychological, financial, or material aspects of producer or consumer actions (see Sorell & Dimitropolous, 2008; Mandeler & Alcott, 2011; Santarius 2012 for an in-depth discussion).[6]

In the field of consumer behavior, which is in the focus of this article, rebound effects occur when consumers reallocate the financial savings generated by efficiency improvements to more consumption (financial rebound effect; Santarius, 2012). An example is the reinvestment of money saved by using more efficient technology into new energy- or resource-consuming products or product characteristics, such as buying cars with more efficient but also larger engines. Under such circumstances, the aggregate resource consumption remains the same or even grows (de Haan et al. 2007). Similar to the effect of lower financial costs, decreasing socio-psychological costs of consumption can be regarded as further possible reasons for rebound effects (psychological rebound effect; Santarius, 2012). If for example neighborhood pressure or the norms of a peer group prevent consumers from buying sport-utility vehicles, "this could change as soon as SUVs with hybrid powertrain[s] enter the market" (de Haan et al. 2007).

Similar to a focus on efficiency, sustainability strategies in line with the principle of *consistency* appear attractive, as they promise altered production and consumption patterns through fundamental innovations in technology oriented toward a basic consistency with natural capital protection (Kleinhückelkotten, 2005). Consistency improvements aim at qualitative changes in production and consumption patterns by resource substitution and adaption to natural resource flows and therewith at safeguarding spaces for growth of material flows, consumption, and the economy at large (Grunwald & Kopfmüller, 2006). Increasing personal well-being would harmonize with consuming different, innovative, and more environmentally friendly products. Besides technical and institutional interventions, and in contrast to mere efficiency strategies, the promotion of consistency attempts would benefit from deeper consideration of psychological aspects such as values, knowledge, or social groups (Kaufmann-Hayoz et al. 2010). Nevertheless, innovations increasing consistency are still missing in numerous fields of production and are unlikely to emerge at scale in the foreseeable future, while other challenges, such as the sustainable harvesting of fish or wood, cannot be addressed by consistency attempts at all (Kleinhückelkotten, 2005; Jackson, 2009; Stengel, 2011).

Sufficiency strategies for SD—such as voluntary simplicity—are based on individual willingness to restrict the consumption of natural resources (Schneider et al. 2010).[7] Such approaches lead to lower volumes of consumption and appear desirable from an ecological point of view, but would also further intra- and intergenerational justice

[6] Scientific assessment of overall rebound effects is a highly contested field. Estimations of rebounds (also called "backfire" or the Jevons paradox) vary largely due to industry sectors and countries assessed as well as methods used. On average, rebound effects are considered substantial: Santarius (2012) supposes 50% and this figure is similar to the calculations of the German Advisory Council for the Environment (SRU 2011), which additionally estimates rebounds of more than 100% in particular sectors.

[7] We are not talking here of forced sufficiency due to poverty or of customary and unconscious sufficiency, but of the conscious choice (implying freedom) of a sufficiency oriented lifestyle.

(Kleinhückelkotten, 2005). Reducing pressure on the environment and decreasing the massive inequalities in consumption levels between affluent and absolutely or relatively poor communities implies that new (role) models of sustainable consumption must be developed (Sorrell, 2010; Siebenhüner, 2011). These interventions must combine sustainability and a good life and are at least in part based on an idea of a low-consumption lifestyle predicated on richness in time and social interaction as sources for well-being and happiness (Hinterberger et al. 2009). In consequence, sufficiency in a broad sense is an integral part of such new prosperity models integrating cultural changes (Kleinhückelkotten, 2005). However, although sufficiency as a lifestyle is argued to increase personal well-being (e.g., Linz et al. 2002), self-interest alone apparently is not enough motivation to reduce "overconsumption" (Alcott, 2008). Substantially sustainable behavior along the lines of sufficiency principles requires intentionally sustainable behavior.

We argue that efficiency improvements and consistency attempts need at least to be accompanied by changes in behavior in line with the principle of sufficiency, even though the systemic effects of sufficiency strategies or their combination with efficiency and consistency need further analysis regarding resource consumption and environmental impact (Alcott, 2008).[8] Furthermore, we assume that orienting efficiency only around self-regarding motives suggests an overly restrictive model of human behavioral motivations (Ingebrigtsen & Jacobsen, 2009). Effective SD strategies have to deal with individuals who aim to increase personal well-being through consumption as well as through the articulation of pro-social values, such as social equality, political participation, and the common good (Heidbrink & Reidel, 2011). Strategies need also to consider individuals who integrate substantial and intentional sustainable behavior into their roles as consumers and as citizens. Effective SD strategies therefore have to address self- and other-regarding motives relevant for consumers and citizens alike.

[8] Similar to efficiency rebounds, sufficiency rebounds can occur at a macroeconomic level, since products and services not used by one consumer simply may get consumed by another (Alcott, 2008; Boulanger, 2010; Mandlener & Alcott, 2011). In contrast to efficiency rebounds, the overcompensation of sufficiency savings by sufficiency rebounds is not typically possible (Mandeler & Alcott, 2011). Scholars argue for a policy mix based on efficiency, sufficiency, and consistency or decommodification strategies alike (Alcott, 2008; Boulanger, 2010; Mandlener & Alcott, 2011).

The Capability Approach

The Capability Approach Used to Understand and Address Motivations for Behavior

One of the factors prompting Amartya Sen to develop the capability approach (CA) was his critique of how mainstream neoliberal economics fails to adequately consider motivation for action. By interpreting any action as monodimensional utility maximization, standard economics loses sight of other reasons for actions such as those expressed in deontological ethics (Sen, 1977). Reinterpreting altruistic behavior as behavior oriented towards one's own well-being is a categorical mistake.

Sen (1987b) proceeds then to differentiate between two main motivations for human agency—own well-being and commitments to others' well-being. In each category, he takes multidimensionality of human goals and realizations for granted. In both motivational categories, it is relevant to individuals how well they fare. This depends on the realization of goals and on the individual freedom to really choose among different goals. In the language of CA, the realization of goals is called "achieved functioning" and the freedom to choose among different goals is termed "capability set" (see Figure 1). Resources are a basis for this freedom, but CA also examines the personal, cultural, and environmental conversion factors that humans require to convert resources into freedoms.

An example of personal mobility illustrates this concept. Cycling to work (the achieved functioning) could be a realization of a goal of own well-being, but could also meet other-regarding aims concerning the bicycle's carbon-dioxide (CO_2) neutrality, silence, and so forth. Cycling to work requires certain resources (a bicycle and a usable surface) and is enhanced by various conversion factors such as traffic culture (say Copenhagen vs. Los Angeles), protective

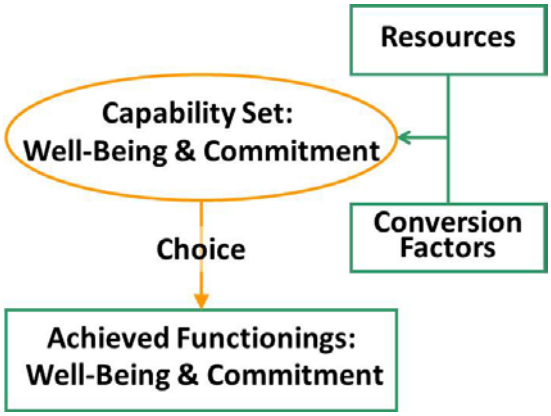

Figure 1 The capability approach.

regulations, climate, and land profile. Political measures to promote cycling herewith can be understood as an increase in individual freedom to meet self- and other-regarding goals. Those policies could focus on resources and on the conversion factors. At the same time, policies forcing everybody to travel by bicycle would restrict the capability set and herewith lower personal freedom.

In conclusion, real freedom includes the availability of resources (in the form, for example, of environmental assets), but also social institutions and individual skills to convert these resources into capabilities. Thus, the capability approach is a means to structurally define the idea of a good life in a culturally and historically independent way (Di Gulio et al. 2012). This structure can be used to nonpaternalistically specify a good life in concrete situations, as shown by the example of personal mobility above.[9]

Sen (1985) and Nussbaum (2000) have developed different versions of CA, but both agree that the evaluative space of what is valuable for human life is multidimensional. While Sen (1985) does not define these dimensions (he argues that this should only be done in context-specific democratic deliberations), Nussbaum (2000) has—in a preliminary consensual process—defined a list of fundamental capabilities that she considers essential for any good human life and which should be guaranteed by governments.[10]

Even though the link between CA and SD is far from evident (cf. Anand & Sen, 1996; 2000; Leßmann, 2011; Leßmann & Rauschmayer, 2013; Rauschmayer & Leßmann, 2013), we suggest that exploring this connection offers several advantages that we investigate in the following (see also Di Giulio et al. 2012).

Understanding Sustainable Development: Needs, Capabilities, and the Good Life

Two facets of CA are important in the context of SD. First, CA explicitly includes goals for actions that aim not only at one's own but that also include others' well-being; it therefore has a wide concept of human agency. Second, CA links needs, resources, and well-being. The importance of both facets is elaborated in more detail below.

In the first instance, substantial sustainable behavior can be motivated by a wish to increase one's own well-being. This is especially the case when the behavioral context has been carefully arranged (an example of an increase of one's own well-being in relative terms would be good cycle lanes or high taxes on fossil fuels where the funds are used for subsidizing public transportation). Through the use of external incentives or regulation, it is possible to make people behave substantially sustainably in their own interest for their own well-being. Such an arrangement is workable in some cases, but, due to uncertainties, impossible in others. The case of the European Union (EU)-wide obligatory inclusion of bioenergy in petrol for individual mobility, and the partial withdrawal of the obligation, shows that the authorities were not able to foresee the effects of this measure on biodiversity and food issues arising from land-use change. Even when such political arrangements to set incentives for sustainable behavior are possible, they are often not realized for immediately practical or political reasons. Furthermore, studies from social psychology, anthropology, and behavioral economics have questioned the efficacy of arrangements that only rely on incentives to increase one's own well-being (Cleaver, 2000; Fehr & Falk, 2002; Vatn, 2009). Kerr et al. (2011) show in detail how the introduction of payments for ecosystem services in communities can lower the effectiveness of protection efforts that formerly relied on pro-social norms. As stated above, financial and psychological rebound effects contribute to rendering efficiency improvements ineffective—improvements that in principle could link substantial sustainable behavior and increased personal well-being.

In line with the Brundtland Commission that focused on the needs of the unborn and the world's poor as those individuals the furthest away from a current European perspective, sustainable behavior can also be motivated at times by a wish to care for even very distant people. One major expression of this intentionally sustainable behavior is the commitment to principles of intra- and inter-generational justice as translated into practical behavior by, for example, purchasing fair-trade products or engaging in pro-environmental behavior. CA's distinction between self-oriented and other-oriented goals (see preceding section) acknowledges that people are inherently motivated for SD, meaning people "care" for the well-being of currently poor and of future generations. Thereby, CA can differentiate between intentionally and substantially sustainable behavior.

In the second instance, needs, if understood in an abstract and categorical way can—in a methodological sense—be understood as the fundamental structure of any multidimensional set of

[9] Additionally, justice can then be measured by capabilities instead of using subjective metrics such as pleasure or preference or objective metrics such as income or access to other resources (Gutwald et al. 2014).

[10] According to Nussbaum (2000; 2011), the ten central capabilities refer to: life, bodily health, bodily integrity, senses, imagination and thought, emotions, practical reason, affiliation, other species, play, and control over one's environment.

capabilities.[11] All functionings can be understood in their capacity to realize different needs—cycling to work, for example, contributes to realizing the needs for subsistence, participation, idleness, identity, and freedom (cf. Max-Neef, 1991). This constitutes a direct terminological link to the Brundtland definition of SD.[12] To achieve functionings, one requires personal abilities, such as skills, knowledge, and motivations; if successful, this realization meets needs, is gratifying, induces well-being, and increases quality of life (Rauschmayer et al. 2011). At the same time, CA directly considers goods and resources as well as social, institutional, and environmental structures (elements of the behavioral context individuals are facing) that are relevant for meeting needs. Meeting needs today and in the future to realize a decent quality of life, and therewith realizing well-being and commitment goals alike, requires a material and social basis. If people today want to behave intentionally and substantially sustainable, if they want to include the needs of future or distant people in their decision-making considerations, then they will have to devote attention to the impacts of their behavior on the material and social basis of other people's lives (Leßmann & Rauschmayer, 2013). By considering this material and social basis, CA not only offers the mentioned terminological link to meeting needs, but a direct substantial link to the goal of SD as well.

The capabilities approach has been used mostly to analyze where governments can redistribute resources or alter relevant conversion factors to enhance the capability set of underprivileged people. Put differently, the aim of policy measures motivated by CA analyses has often been on extrinsic empowerment that builds on resources and conversion factors external to people. Susan Pick & Jenna Sirkin's (2010) applied research on poverty demonstrates that, by including intrinsic empowerment by way of enhancing capability-sets through changing psychological factors, CA can still increase its potential. Realizing this potential is crucial as motivational factors are essential for sufficiency strategies.

Contributions and Flaws: The Example of "Breaking the Poverty Circle"/Participatory Development Work

This section introduces an experience-based model that explains the success of intrinsic empowerment in poverty-reduction campaigns (Pick & Sirkin, 2010). It is a first step to building a CA-based model that accounts for normative sustainable behavior (which we develop in the final section, "An Integrative Model"). The original Pick-Sirkin model combines the CA with the theory of planned behavior, assuming that people consciously choose behavior out of a set of perceived real opportunities, while personal abilities and self-perception are essential variables in perceiving opportunities and in choosing options (Figure 2).

Pick & Sirkin (2010) show how CA has been used to understand the driving factors behind successful community development in Mexico, particularly with women and poor groups. Already 25 years ago, Susan Pick had identified psychological barriers as the main reason for the nonimplementation of family-planning measures in Mexico. When subsequently addressing these barriers through educational work by nongovernmental organizations (NGOs), she noticed that women participating in such groups start to behave differently, not only in family planning, but also with respect to the educational system and their own economic activity. Intrinsic empowerment through education not only increased their capabilities in one area, but also enhanced their opportunities elsewhere—new skills induced changed behavior, which led to a different perception of self and self-efficacy. This, in turn, is the basis for recognizing

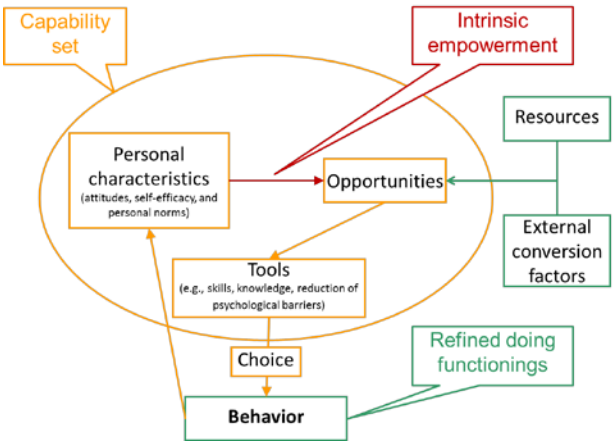

Figure 2 Intrinsic empowerment out of poverty (altered from Pick & Sirkin, 2010). Tools and personal characteristics in CA models are usually among the conversion factors (e.g., Robeyns, 2005). Here, external and internal conversion factors have been separated to highlight the internal dynamics.

[11] Max-Neef (1991) uses ten abstract and categorical needs shared among humans: subsistence, protection, affection, understanding, participation, idleness, creation, identity, freedom, and transcendence.

[12] In contrast to the abstract needs understanding of Max-Neef and other scholars of humanistic psychology (Maslow, 1987, Vlek, 2000), the Brundtland Commission's conception of needs also included strategies to meet those needs, such as jobs, sanitation, or water supply.

new opportunities in other areas of life.

Figure 2 redrafts this feedback loop. Women recognized specific opportunities, such as visiting doctors who taught family-planning methods, but tended not to see these physicians because of high socio-psychological barriers. Training allowed them to overcome these obstacles. This (and further changed behavior) also gave the women another image of themselves—different personal norms, higher self-efficacy, and altered attitudes toward family or sexuality. This new image intrinsically empowered them to create new opportunities in previously unexplored areas, such as child education or business, which in turn led to changed behavior and improved well-being. These intrinsic empowerment programs enabled participants to develop novel perceptions, to exploit available resources, and to facilitate the self-enhancement of their capability set.

The feedback loop described above might contribute to making these kinds of changes more durable, where the motivation for changed behavior is self- (or family-) regarding. Pick & Sirkin's (2010) intrinsic empowerment model helps to demonstrate how long-lasting, widespread changes toward individual well-being can be achieved, which is especially important in countries with widespread poverty. Such interventions do not, however, say very much about sustainability in the sense of the Brundtland definition of SD, where the motivation clearly lies in other-regarding interests predicated on caring for the world's poor and future generations. However, the Pick-Sirkin model does provide help in accounting for altruistic motivational factors for intentional sustainable behavior. Therefore, translating this model to include sufficiency-oriented motives in industrialized countries requires some modifications. In the following section, we draw on studies from environmental psychology to gain insight into strengthening the impetus for other-regarding behavior independently of well-being motivations.

Steps to Extend the Scope of the Capability Approach by Linking It to Psychology

Variables Influencing Behavior Shared by Different Psychological Approaches

Behavior that can be considered substantially sustainable often contradicts individual self-oriented interests, particularly in the short and middle term (Fuhrer & Wölfing, 1997). To take responsibility for, to bear the related individual costs of, and to act in coherence with the common good can be called pro-social behavior, motivated by altruism (Hopper & Nielsen, 1991; Fuhrer & Wölfing, 1997; Stengel, 2011).[13] Following Frey and colleagues (1996), we can assume that people convinced that sustainable behavior is worthwhile (who are intrinsically motivated) are likely to have more stable substantial sustainable behavior than those not similarly convinced (see as well de Groot & Steg, 2009). Therefore we consider them to be less likely to "rebound" in their sustainability behavior due to financial or psychological effects outlined above (cf. Peters et al. 2012). Persuading people, though, does not make them behave sustainably, as (altruistic) motives do not automatically become relevant for (pro-social) behavior.[14]

What are the psychological reasons behind behavior in general and pro-social, sustainable behavior in particular? A number of concepts from psychology have been applied to questions of pro-environmental and sustainable behavior (Matthies & Homburg, 2001; Steg & Vlek, 2009; Osbaldiston & Schott, 2012). These approaches include the theory of planned behavior (Fishbein & Ajzen, 1975; Ajzen, 1991) and the norm-activation model (Schwartz, 1977; Schwartz & Howard, 1981), but also models on the influence of habits by Triandis (1977) and the ipsative theory of action (Foppa, 1989). Matthies et al. (2004) screen the different theories for the factors considered most important for environmentally friendly behavior and discuss numerous studies (see as well Kaufmann-Hayoz et al. 2012). Named variables include:

1. The personal environmental norm (feeling of obligation for environmentally friendly behavior)
2. Social norms (perceived behavioral expectations of others)
3. Awareness of problem, awareness of consequences
4. Cost/benefit expectations
5. Awareness of consequences of behavior/ascription of responsibility
6. Perceived personal agency/behavioral control
7. Habits

In the context of analyzing and strengthening sustainable behavior based on altruistic motives, the theory of planned behavior and Schwartz's norm-activation model appear promising as they consider

[13] De Groot & Steg, (2007; 2008; 2010) and Garcia-Mira et al. (2013) differentiate altruistic and biospheric values as variables influencing the motivation for environmentally friendly behavior and find empirical proof for their influence on pro-environmental behavior. For reasons of simplicity we consider both of them under the term of altruistic values.

[14] A core characteristic of altruistic motivations is that most people would approve of altruistic norms to govern a particular behavior, but not everybody behaves according to this norm (Hopper & Nielsen, 1991).

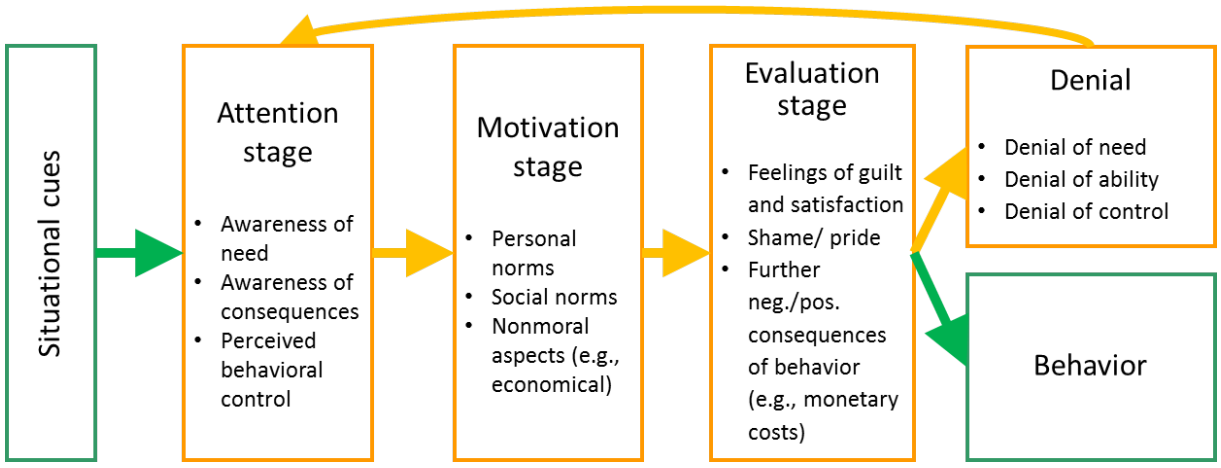

Figure 3 Graphical representation of the norm-activation model (Klöckner & Matthies, 2004, strongly modified).

norms and values as important variables influencing behavioral choice (cf. Matthies et al. 2004). The Schwartz model in particular has been successfully applied to case studies on altruistic behavior. Within both models, individual behavior is thought to depend on the intention to behave in a certain way (e.g., Schwartz, 1977; Ajzen, 1991). This implies that we focus our analysis on behavior that is chosen consciously. Behavioral habits are not the primary focus of this model.[15]

Towards Altruistic Motivations for Behavior

Core Variables: Personal and Social Norms

The theory of planned behavior proposes behavioral intentions as crucial variables on deciding actual behavior. Three aspects are supposed to determine intentions: 1) the attitude toward the behavior, 2) the subjective norm (as the perceived expectations of relevant others), and 3) the perceived behavioral control (Matthies et al. 2004). The individual attitude toward a behavioral alternative is influenced by its anticipated consequences. In this understanding, altruistic behavior is performed if there is a strong subjective norm expecting altruism and if the persons holding this norm are of great importance to the actor. A precondition for this outcome is the perception that a person is able to carry out the considered behavioral alternative.

The norm-activation model of Schwartz & Howard (1981) offers additional explanatory power, as it looks more deeply into the different norms individuals hold. The model explains how norms are activated in certain situations and how they are translated into personal responsibility that finally leads to pro-social behavior (Fuhrer & Wölfing, 1997).[16] Schwartz & Howard (1981) understand behavior as motivated by the wish to act in a norm-concordant way, differentiating between general ethical norms and personal and social norms. General ethical norms are translated into personal norms during socialization. Various personal norms together form cognitive structures at a high level of abstraction. To direct concrete decisions about how to behave, these abstract personal norms have to be activated and evaluated with regard to the specific situation (Fuhrer & Wölfing, 1997). They result in feelings of individual moral obligation to act in a certain way. Social norms, in turn, are based on expectations of other persons of how the individual should act in a given situation and also influence the decision of which behavior to carry out. Pro-social behavior can be motivated by personal or by social norms (Stern et al. 1999). To better understand pro-social behavior via the norm-activation model, we take a closer look at the behavioral choice process assumed in the model.

Process of Norm-Activation for Pro-Social Behavior

Schwartz & Howard (1981) conceive a four-stage process for reaching normative decisions (Figure 3):

[15] Habits are, of course, very important elements of behavior. But behavioral change and motivation can hardly be explained through habits due to the unconscious selection of such behavior. One might, of course, assume that in the beginning unconscious behavior was consciously intended before turning into habits (Aarts, 1996; Schäpke & Rauschmayer, 2011). Consumer-awareness programs will address the challenge of bringing unconscious behavior back to consciousness and create new behavioral alternatives (Kaufmann-Hayoz et al. 2010).

[16] For empirical testing of the norm-activation model see Hopper & Nielsen, 1991; Hunecke et al. 2001; Joireman et al. 2001; for a comparative discussion see Stern et al. 1999.

1. *Attention stage*: Specific problem-relevant feelings and cognitions are activated by situational cues. This process of activation occurs in three steps. First, individuals check whether they have to act at all. With regard to sustainability problems, they evaluate whether the situation is dangerous or challenging to humans or the environment (Fuhrer & Wölfing, 1997). Second, they identify existing behaviors able to cope with the problem. Finally, they evaluate their individual ability to carry out relevant behavior (perceived behavioral control).
2. *Motivation stage*: If an individual possesses the ability to carry out such problem-relevant behavior, different implications of the behavior are considered—physical and material including monetary implications, on the one hand, and ethical and social consequences on the other hand. Ethical consequences refer to internalized personal norms, while social consequences relate to other people's social norms and expectations with respect to the considered behavior. Both norms create individual and case-specific moral obligations.
3. *Evaluation stage*: The individual evaluates the consequences of behavior, considering case-specific aspects such as time and money as well as person-specific aspects such as the importance of the personal norms involved for self-concept (Fuhrer & Wölfing, 1997). A violation of a personal norm results in shame, while upholding a personal norm results in pride (Hopper & Nielsen, 1991). Violating social norms can cause guilt, anger, or fear with regard to the anticipated reaction of others (Hopper & Nielsen, 1991).
4. *Manifestation stage*:
   a. *Denial*: A conflict arises when various positive and negative consequences of the considered behavior are evaluated as more or less equivalent. The individual then starts redefining the problem and moral obligation. Here, a re-evaluation of any of the three first stages can lead to denying the importance of the decision to act (Fuhrer & Wölfing, 1997).
   b. *Behavior*: In the case of no-denial, a (pro-social) behavior becomes manifest (Fuhrer & Wölfing, 1997). A self-interested behavior is expressed if no altruistic personal or social norms are activated (e.g., due to missing awareness of consequences or missing altruistic norms) or if the individual does not feel responsible for the consequences and/or if the related personal costs are evaluated to be higher than the moral obligation of a pro-social behavior.

Preconditions of Pro-social Behavior

As stated above, a core characteristic of altruistic behavior is that most people would approve a norm governing a particular behavior, but not everybody behaves according to it (Hopper & Nielsen, 1991). In accordance with this observation, subsequent studies (e.g., Kals & Russell, 2000) show that the majority of European citizens have a strong altruistic motivation for global environmental protection. Empirically, this motivation significantly influences concrete willingness to conduct environmentally friendly behavior (Matthies et al. 2004). Nevertheless, and following norm-activation theory, empirical research shows that transmission of personal norms into pro-social behavior has certain preconditions. Stronger awareness of (future) consequences and individual attribution of responsibility increasingly lead to personal norms that promote pro-social behavior (Fuhrer & Wölfing, 1997; cf. Schwartz & Howard, 1981; Bierhoff & Montada, 1988; Joireman et al. 2001; Bamberg & Schmidt, 2003; De Groot & Steg, 2009).

Additionally, scholars of environmental psychology highlight the influence of the perceived ability to select behavioral alternatives (i.e., size of the capability set) on the perception of individual responsibility. If people feel strongly predetermined in behavioral possibilities, they feel less responsible for the consequences of their actions (Heberlein, 1972). Accordingly, perceived behavioral control is a crucial variable in various social psychological models of behavior (Bandura, 1977). A lack of belief in the individual ability to carry out a behavioral alternative significantly reduces the motivation and feeling of moral responsibility to behave in a certain way. Studies show a strong tendency to recalibrate personal norms in cases of high anticipated personal cost of environmentally friendly behavior. In this way, the willingness to engage in environmentally friendly behavior is reduced (Tyler et al. 1982; De Groot & Steg, 2009b).

In the next section, we include the knowledge gained from environmental psychology in an integrated model to understand motivations for behavior. This model links CA and the norm-activation model and puts an emphasis on the freedom to choose behavioral alternatives as well as on the awareness of behavioral consequences as key factors influencing pro-social behavior.

An Integrative Model: Linking CA and Central Variables of Psychology

This section combines the interpretation of CA as developed by Pick & Sirkin (2010) with the norm activation model of Schwartz & Howard (1981). We begin by reviewing Figure 2, which highlights a per-

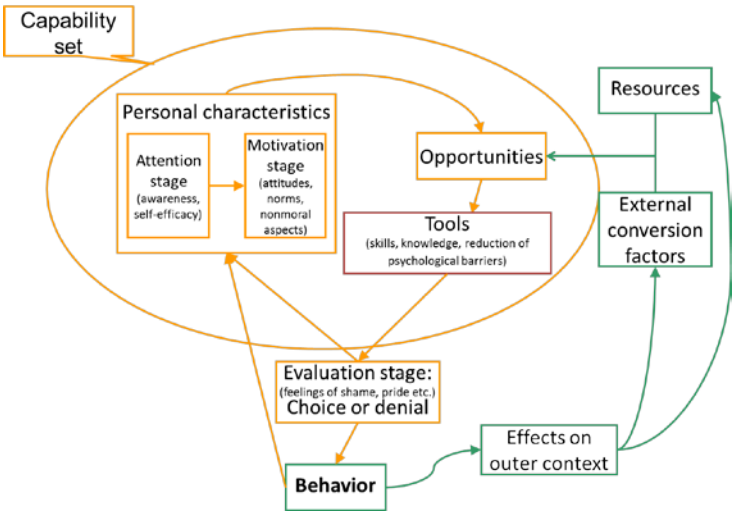

Figure 4 Dynamic norm-activation-capability model.

son's capability set, defined as the valuable behavioral alternatives from which a person is free to choose. This set consists of the opportunities the person has to act, plus her skills and personal characteristics. A person's opportunities depend on the use of external resources and conversion factors. We now extend the bicycle example mentioned above by noting that the capability to ride a bicycle depends on resources (e.g., possessing a bicycle) and external conversion factors (e.g., a reasonably smooth pathway). Recognizing the opportunity to ride a bike depends on the person's attitudes, their perceived self-efficacy, and their norms. Making use of the opportunity asks for certain skills and knowledge (e.g., the skill to ride a bike). A person decides to carry out a certain behavioral alternative to realize her well-being or agency goals. Two feedback loops arise from a successfully achieved behavior. The internal loop enhances the person's perceived self-efficacy, their awareness of the problem, and their attitudes toward a specific behavior, whereas the external loop influences the resources and conversion factors and, in turn, the opportunities a person has.

In addition to Pick & Sirkin's version of CA, the new model presented in Figure 4 further differentiates the steps involved with regard to the activation of norms particularly relevant for choosing pro-social/altruistic behavior. The choice to behave in a certain way (e.g., to ride a bicycle) or not depends, on one hand, on the behavioral alternatives that consist of the person's opportunities (resources and conversion factors), and the skills they can apply to make use of them. In the case of the current example—does she have a car or is a public transportation system available? On the other hand, the behavior's likely consequences are evaluated against moral and non-moral criteria, such as time, money, and the importance of the personal norms involved for the person's self-concept (is cycling good/bad, expensive/cheap? Does it correspond to her self-image as, for example, an athletic or independent person?).

But the consideration of pro-social behavioral alternatives (she wants to cycle due to care for others and not for her own interest) has attention and motivation as conditions. In the attention stage, specific and problem-relevant feelings and cognitions have to be activated (mobility-induced CO_2 emissions need to be regarded as a problem) and the person has to be aware of her own ability and responsibility to behave in a pro-social way (she can go by bicycle to work). In the motivation phase, as the second condition to perceive a specific behavior as an opportunity to behave pro-socially, a specific moral obligation is created as a function of the economic, moral, and social costs of behavior (she should care for the environment, her image, and her expenses when going to work).

Then the consequences of behavior are evaluated against the developed moral obligation to behave pro-socially. This evaluation either leads to pride and gratitude for behavioral alternatives in line with personal and social norms or to shame, fear, and guilt for behavior opposing these norms. If this calculation leads to an ambivalent result, a redefinition of the problem and the moral obligation is possible via denial and/or justification (in fact, it does not matter that she takes the car, as all others travel by car as well). Finally, the behavior—pro-social or not—becomes manifest (Fuhrer & Wölfing, 1997).

Pro-social behavior therefore depends on the relevant personal and social norms, along with the opportunities and skills, responsibility, self-efficacy,

and awareness of the necessity to comply with these norms. The capability set, as the freedoms of a person to act, depends on the characteristics of this person as well as her opportunities and tools. Carrying out a chosen behavior, or denying the need to carry it out, impacts the personal characteristics. Executing it also feeds back to the behavioral context and may change the behavioral opportunities. For example, increased cycling leads to higher traffic security for cyclists.

Conclusion and Outlook: The Freedom to Behave Pro-socially

Recalling the introduction and the section on SD, strategies that address both altruistic and self-interested motivations for behavior appear particularly promising for strengthening sustainable behavior. Whereas current psychological models have studied this combination (Steg & Vlek, 2009), those approaches cannot be used to assess strategies on societal target variables such as quality of life. Models currently used for such assessments, though, are mostly based on self-interested motivations or do not take into account differences in motivations at all (e.g., Schleich & Mills, 2012). Within CA, which has been used for societal assessments of different kinds of policies, behavior is understood as directed to meet self-interested and other-interested goals. It therefore offers two entrance points for empowering people to "live a life one has reason to value" including altruistic reasons for behaving sustainably. As CA provides little information on the importance of altruistic reasons or of pro-social behavior within this "life one has reason to value," intrinsic concepts can enrich CA.

The dynamic norm-activation capability model developed in the preceding section allows designing and assessing efficiency, consistency, and sufficiency SD policies and instruments, as they include psychological considerations with behavioral impacts on the societal target of quality of life via the CA. The following explanations are a starting point for discussions on how to further develop and use the model.

Including the Strengthening of Pro-social, Sustainable Behavior

The model allows for assessing the extent to which a sustainability policy addresses the psychological driving factors of pro-social behavior (such as awareness building or strengthening feelings of self-efficacy and responsibility). It focuses on the psychological empowerment of citizens and consumers, as it enables analysis of whether a policy measure increases the capability set to behave sustainably with regard to the use of resources and conversion factors. The model can be used to derive interventions that strengthen these effects and are intentionally and substantially sustainable.

Matthies et al. (2004) distinguish between intervention approaches that focus on external and internal variables. External variables include technical modifications as well as incentives and punishments that change a given situation; they are the external conditions of behavior. Internal variables are differentiated into norm- and knowledge-centered approaches. The latter strengthen problem- or action-oriented knowledge while the former focus on the activation/strengthening of norms through campaigns or role-models. This differentiation of internal variables may guide the design of effective policies, including sufficiency principles that specify when citizens require more knowledge and when an activation of norms might be more effective. This differentiation might even build a basis for modeling interventions that allow the further development of personal norms to include more consideration of others (cf. Wilber, 2000).

SD Policies Shifting the Focus of Quality of Life

The dynamic norm-activation capability model suggests understanding sufficiency-oriented SD policies not only as restrictions in resource use but as shifts of the capability set toward goals motivated by the well-being of others. Individuals subject to such policies, such as converting car lanes to cycle or public-transport lanes, might lose the self-interested capability to go to work comfortably while gaining the freedom to more easily achieve the other-interested goal to reduce CO_2 emissions. Whether individuals appreciate this new freedom depends on their altruistic motivations and on the individual recognition that the new freedom can meet other-regarding goals. Converting car lanes to cycle lanes may therefore be combined with information and norm-activation campaigns such as those mentioned above. We assume (with no empirical validation so far) that similar feedback effects occur for sustainability issues as for poverty eradication, as described in the section on Pick & Sirkin (2010). This implies that shifting the capability sets to include intentionally sustainable goals and achievements will have a self-reinforcing aspect. Again, policy effects should reinforce intentional and substantial sustainability.

Our model not only allows psychological analysis, but includes—with the concept of capabilities—a variable that has been used for decades to describe societal progress.[17] It therefore allows scholars or politicians to indicate the potential impact of a policy

[17] The most important applications are the UNDP reports on human development, most notably in our context the UNDP (2011) report on sustainability and equity.

on capabilities and functionings of a person or group. Including psychological and external variables, its application furthermore allows identification of internal and external sources for shifts in capability enhancements or detractions. This might be carried out by analyzing whether the policy is likely to foster a process of intrinsic empowerment that increases the capabilities and functionings available to a person and thereby the advancement of well-being (and agency) goals. Through time-series analysis, one might even get answers as to how durable (intrinsic) empowerment for increasing capabilities and functionings could be achieved.

Nevertheless, the model has limitations for strengthening sufficiency strategies that propagate norms such as voluntary simplicity. Freedom to choose a behavioral alternative is an important factor influencing the probability that a pro-social behavior is chosen. To understand empowerment as increasing the capability to behave only in a pro-social way appears like a contradiction to the original idea of the capability approach itself. Propagating altruistic motives for pro-social behavior may stimulate reactions that lead to opposite effects. It is not evident, though, how to design SD strategies that foster capabilities and increase the likelihood of pro-social behavior without substantially interfering with people's freedom.

Three possible entry points, ranging from more directed to open approaches, are capability ceilings, nudging, and, finally, social learning. First, introducing capability ceilings (Holland, 2008) or bounded capabilities (Jackson, 2009) might be alternatives for political actors to steer capability developments. Holland and Jackson plead for introducing sustainability-motivated limitations to individual capability enhancement on a political level. These limitations might create resistance, but they could also be understood as an enhancement of social norms. Empirical research could clarify this question.

Second, the concept of nudging, making the sustainable behavior alternative the most convenient and easy to recognize, might form an alternative to steer capability developments while not directly limiting individual freedom (Thaler & Sunstein, 2008).[18]

A third entry point for strengthening both empowerment and pro-social motivations, while not interfering with individual freedom, are social learning approaches that are part of the governance strategy of transition management (Grin et al. 2010; cf., Barth 2012). The approach aims to empower people to give a contextualized form to sustainability corresponding to their own demands and environments (Loorbach, 2007), building on a participatory envisioning and experimentation process (for an in-depth discussion, see Schäpke et al. 2013). Processes of joint deliberation and reflection are supposed to allow going beyond individual interests "and create opportunities for a shared understanding and joint action" (Garmendia & Stagl, 2010).

New Well-Being Model

The dynamic norm-activation capability model encompasses variables relevant to the well-being of actors. On the one hand, these variables include normative goals of guaranteeing freedom to live a life one has reason to value. On the other hand, it addresses variables that foster the willingness of actors to behave pro-socially and adopt a sufficiency-oriented lifestyle. It therefore may form the basis for a new well-being model. The newly developed model does not consider behavior intended to realize self- or other-regarding goals as opposites, but offers ways to strengthen individual capabilities that link self- and other-regarding goals and thereby increase overall well-being.

This article has developed a model that explicitly includes the intentions behind sustainable behavior and that can therefore assess efficiency, consistency, and sufficiency strategies for SD, resulting in changes in politically relevant variables such as quality of life. This model delivers a foundation to assess the behavioral impacts of a wider variety of public policies than has been previously possible.

As far as we have been able to discern, combining concepts from environmental psychology and CA in one model is new and much still must be done to specify and improve this approach. We can identify three conceptual questions that require further attention. First, is norm activation, even though widely used in environmental psychology, really the appropriate model to analyze intentionally sustainable behavior? Second, is the link between the norm-activation model and CA via the theory of planned behavior conceptually solid and can it be used empirically? Finally, how should capability sets be measured in the domain of sustainable behavior? Despite the openness of these questions, we have shown that a norm activation–CA link is conceptually feasible and has promise for including sufficiency strategies for SD into analyses and designs of sustainability policies. How this could be done in practice, though, remains to be shown.

[18] However, as an anonymous referee pointed out that the idea of nudging itself is contrary to the concept of conscious decision-making prominent in CA and in the psychological models discussed here.

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