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Establishing Sustainable Consumption – How Future Policies Can Channel Consumer Preferences

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Abstract

This paper relates cultural evolution theory and social learning dynamics to induced preference change in consumption behavior. We argue that the promotion of sustainable consumption via preference change is a cornerstone of future policy and should complement standard regimentations such as regulation for harm reduction in production and the investment in green technologies. The application of cultural evolution mechanisms may act as a key element for implementing future societal acceptance of responsible individual consumption and a trigger for the self-transformation of the economy. We will discuss what kind of policies can be used in future to channel our consumption preferences and build up an economic “presents for the future” scenario that will go beyond existing policy tools. An already established tool in behavioral economics that provides an elegant, cheap and often effective measure to promote green behavior is “green nudging.” However, it comes at the cost of being perceived as paternalistic and non-transparent. In addition, nudging requires the alteration of a very specific choice architecture for every single consumption decision scenario and is therefore limited in its scope of application and – most importantly – long-term effectiveness.

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Here we offer a more general behavioral approach for future environmental policy. We argue that preference change for consumption can be induced by policy makers using tools drawn from cultural evolution. We develop concrete scenarios for policy makers to induce pro-environmental preferences within consumer populations. We argue that our approach is likely to induce alteration of existing and the establishment of new consumption patterns on a much larger scale than nudging and will be more successful in establishing permanent future effects.

Keywords

Future Policy, Microeconomic Policy, Sustainable Consumption, Cultural Evolution

JEL Classifications

Q28 ; Q01 ; B52 ; D04

1. Introduction

Advocates of a “strong sustainability approach” to economics, grounded on the thermodynamic foundation of a steady-state economy (cf. Daly, 1972, 1974, 1977), argue that global resource depletion, environmental pollution and climate change call for a radical restructuring of our economic system (Ayres et al. 2001; Goodland & Daly 1996). Especially overconsumption in high income economies is putting high pressure on local and global ecosystems. In ecological economics as well as in ecology (e.g. Sala et al. 2000), climatology (Parry et al. 2004) and agriculture (Le et al. 2016), there is almost consensus that the current growth path of the world economy is not sustainable in the long or even medium run. Although these concerns are well known for a long time (see Club of Rome report: Meadows et al. 1972) and are frequently addressed by global leaders, surprisingly little action has been taken by policy makers to establish institutions and action plans that actually contribute to strong sustainability. This asymmetry in perception on the one hand and lack of action (political as well as individual) on the other hand has been analyzed in the literature as value-action gap (e.g. Kollmuss & Agyeman 2002).

We identify in this paper some hindrances for serious sustainability policies and the neglect of ecological reasoning in day to day politics. They are caused by the application of inappropriate tools and policy advice for global as well as local executives and leaders. Traditional economic policies are applied to regulate harmful production techniques, taxing harmful substances, subsidizing the development of green technology or designing markets to reduce emissions by introducing CO₂ certificates. These policies are – at least in principle – effective in regulating externalities that arise from unintended environmental harm, mostly caused by producers. They are not, however, addressing a major obstacle for a truly sustainable economic system: the quantity and quality of individual consumption. A change of consumption behavior would prerequisite a change in consumer preferences or consumer wants (Witt 2011). It is, therefore, a behavioral issue that has to be addressed by future policy: what can we do that consumers are willing to reduce their levels of consumption? What can be done that they freely choose sustainable technologies and products over conventional ones? What is needed that people start to act green on their own account?

It is no coincidence that there exists no environmental economics measure addressing these questions: standard economics is silent on preference change, because there is no economic concept of preference change! Preferences are taken as given or inborn and treated as beyond economic consideration (Cordes & Schwesinger 2014; Norton et al. 1998; Safarzyńska 2013; Waring & Richerson 2011; Witt 2011). This has severe consequences, when it comes to designing policies that are needed to change consumer preferences towards sustainability in general.

This paper seeks to develop a roadmap for future policy making that allows governments to induce systematic preference changes in people and to encourage more sustainable consumption behaviors. Our main argument will be that policy has to create opportunities that help people to develop sustainable or green preferences and to contribute to a culture¹ of environmentally-aware citizens, instead of manipulating single consumption decisions (e.g. by nudging). Our work is a contribution to a socio-ecological research agenda that seeks to develop behaviorally informed policies in future (Babutsidze & Chai 2018; Garmendia & Stagl 2010; Pahl-Wostl et al. 2008; Siebenhüner 2000). The paper is identifying blind spots in present sustainability policies and presents a possible future pathway. Thereby we describe future practices in which overconsumption and maladaptive status -related consumption can be reduced. At the same time, it sheds light on an important element of “futures for the present” by developing a vision how sustainable and responsible consumption behavior could be incorporated into our culture.

In the following section 2 we will discuss the concept of green nudging and its limitations. Section 3 will introduce a cultural evolution and social learning approach to preference change. Section 4 will sketch future policy making agendas that will make use of social learning mechanisms. Section 5 concludes.

2. Green nudging – and why it is not enough

Promoting green consumption behavior is one of the things that traditional political regulation is not very successful at. Bans and taxes work, but have not yet lead to a sustainable society. A promising new angle to approach this problem comes from the field of behavioral economics and experimental psychology and is coined “green nudging.” Nudging claims that it is “legitimate to try to influence peoples’ behavior to make their life longer, healthier and better – as long as they judge themselves to be better off and their freedom of choice is preserved” (Thaler & Sunstein 2008). The concept proposes positive reinforcement and indirect suggestions to reach a non-coercive alteration of (individual) decision making. Proponents claim that it is even more effective than the traditional methods of direct suggestions or laws, which is why it appears so attractive for governmental use (Benartzi et al. 2017). For example, nudges can reach higher compliance rates without public backlashes (Johnson & Goldstein 2003), can lead to higher honesty (Shu et al. 2012) or are often just cheaper than other methods (Thaler & Sunstein 2008). The idea is to change the individual choice

¹ We adopt here the definition of culture given in Brooks et al. (2017): “In the cultural evolution literature, culture is defined as socially transmitted information, which can include beliefs, values, behaviors, and knowledge, and - more specific to sustainability science - the technologies, lifestyles, consumption patterns, norms, institutions, and worldviews that ultimately shape human impacts on the environment. This approach typically focuses on individual cultural traits or variants.”

architecture – the way choices are presented to people – which will let the majority of people make the desired choice without explicitly forbidding anyone to choose other options. As Thaler and Sunstein put it, a nudge is “any aspect of the choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentive.” This means that changes in the price of a product or fines for wrong behavior wouldn’t count as a nudge while it of course would influence the actions of people.²

While boosts (a non-coercive intervention to raise people’s competence to let them make their own choices) will try to help people overcome these biases (Grüne-Yanoff & Hertwig 2016), nudges are explicitly using them to gain a desired outcome in a specific decision scenario. Therefore, some people claim that nudges are paternalistic, manipulative and ethically dubious (see for example, Barton & Grüne-Yanoff 2015; Schubert 2017). Thaler and Sunstein (2003) reply to this critic by proclaiming the concept of “Libertarian Paternalism”, a form of soft paternalism where it is possible and legitimate for an institution to affect behavior while still respecting the freedom of choice. If the ultimate goal of a nudge is the implementation of a sustainable and environmentally friendly choice in a particular situation, then it is called a green nudge. According to Schubert (2017) green nudges are only partly justified on paternalistic grounds, and most of them belong to the non-paternalistic realm of applications. He also suggests to divide green nudges in three categories which are (1) green nudges that work through changing the default options for people (e.g. using renewable energy instead of conventional) (2) green nudges that work with a consumers’ desire to maintain an attractive self-image through green behavior and (3) green nudges that focus on social comparison.

The best and most lasting results are achieved for class (1) of green nudges (see Pichert & Katsikopoulos 2008; Sunstein & Reisch 2013). An attractive “self-image nudge” (2) could be eco-labeling of products, so people can deliberately buy green products and their peers can observe this behavior (see Bratt et al. 2011; Teisl et al. 2008). Like in all forms of status consumption, a certain number of people showing this green behavior could influence consumers to show conspicuous conservation (Sexton & Sexton 2014). Consumers want to show their commitment to the environment to others and this behavior then may be imitated.

A good example of a green nudge using the behavioral bias to mimic peer behavior (3) is given by the most prominent field experiment conducted by Opower (an independent corporation, until it was bought by Oracle in 2016, that provides a software-as-a-service customer engagement platform for utilities), which is described in detail by

² In a similar way psychologists use cognitive heuristics to improve decision making in healthcare. Gigerenzer (2008) argues that under uncertainty it is most often more efficient to use very simple but smart “rules of thumb” instead of rational analysis. Applying these heuristics and rules of thumb can help physicians to improve their diagnostics and also save time and money (Gigerenzer & Gaissmaier 2011).

Allcott (2011). The nudge that is used there (making electricity consumption of the peer group visible and rank your own consumption in comparison to that) is interesting in several respects. First, it focuses on electricity consumption, which is mostly a hidden consumption that cannot easily be compared to the consumption of one's peer group. Only through additional information made available by the company, the consumption behavior of one's neighbors becomes visible. This allows people to engage in a kind of social competition, which will finally lead to a reduction in energy consumption. Secondly, this example also shows that nudges must be carefully implemented. Just giving everyone the information of the consumption of their peer group is not enough because there is the risk of a "boomerang-effect" (Clee & Wicklund 1980). The effect of the nudge may vanish because the most energy conserving people will start to consume more electricity. Thirdly, another possible pitfall is the political ideology of the people targeted with certain nudges. Costa and Kahn (2013) were able to show that the reaction to home energy reports strongly differed between Republicans and Democrats and a study of Gromet et al. (2013) confirmed this differentiation regarding choosing energy-efficient technology. As the nudge is operating on social comparison via a kind of social game and not targeting preference change, people could respond negatively as soon as they realize that their decision is manipulated towards a political goal they do not share. People have to perceive green policies as fair; otherwise, they are unlikely to work (Gowdy 2008).

A major problem with green nudging (at least when non-default nudges are used) is that people are slowly turning back to their status quo after the nudging stops. There is currently little research on the long-term effects of nudging, however, many experts suspect that they will alter behavior only in the short run (Allcott & Rogers 2014; Ferraro et al. 2011; Ito et al. 2015). Green nudging does not address the preference architecture of the decision maker. The basic wants or desires of an agent are treated as a black box (the economic theory of individual utility does only address relations of given preferences, not their origins) and it is therefore unlikely that the decision maker will continue with sustainable behavior in the absence of the nudge or a slightly changed choice architecture.

We therefore can identify two main shortcomings of the nudging approach: first, it is not targeting the preference structure that underlies consumption, and will therefore produce only temporal effects. Second, nudging can be interpreted not only as paternalistic but also as unfair and manipulative. Given these shortcomings, nudging seems unlikely to contribute to a wider cultural change in consumption behavior that we consider necessary for sustainable future policy.

3. A cultural evolution approach to preference change

According to Norton et al. (1998), conventional economics is based on the postulate of consumer sovereignty. Consumers possess certain preferences and economics as a science should confine itself to find optimal solutions how these preferences and corresponding wants and needs can be satisfied. Unfortunately, economics does not have a theory of endogenous preference change over time. Therefore, we require a concept of how preferences for consumption are acquired in the first place, and (as we do not assume that our preferences are hard wired in our genome) we need some theory of how they are learned (Witt 2001).³ We argue that an agent's consumption behavior is largely a cultural phenomenon, based both on individual and social learning and strongly determined by the social environment of people.⁴ The true challenge for future policy makers, therefore, is to implement cultural changes that allow individuals to develop and learn green preferences and thereafter consume in a responsible and sustainable way. When we talk about social influence on consumption decisions we are not only including status consumption (although a large share of status consumption is actually responsible for the most harmful forms of individual consumption), but we claim that individual decision making in general is very often directly dependent on previous cultural transmission of preferences, even in the absence of status considerations.

Instead of looking at single decision making situations, we need to introduce a method to analyze preference formation in the first place. The most advanced theoretical framework to study learning of preferences on a population level is cultural evolution theory (e.g., Boyd & Richerson 1985; Henrich 2016). This approach bridges behavioral science and social sciences by providing a theory how culture changes over time. The basic assumption is that genes and culture coevolved over thousands of generations making humans a distinctly cultural species. A great share of our behavioral repertoire has been shaped by evolution in context of cultural environments. By nature, human agents are heavily relying on cultural information that we acquire through social learning. Social learning here means the acquisition of all kinds of information via observation and imitation of our social environment. Language, norms, traditions, beliefs, values and preferences are transmitted vertically (from parents to

³ Some preferences indeed seem to have a genetic basis such as a preference for fatty and sweet food (Ventura & Worobey 2013). Much more relevant for sustainability goals in high income countries are other forms of consumption and we are safe to assume there is no genetic basis of preferring driving a big car over let's say an e-bike or train (Witt 2001, 2011).

⁴ The idea that consumption is often driven by social forces goes back to the concept of conspicuous consumption described by Veblen (1934). While he analyzed the behavior of the new rich social class that emerged after the Second Industrial Revolution, the improved living standard of western countries nowadays applies this concept to nearly everyone who has the ability to buy products to publicly display his social status or prestige. This makes sense, because the concept of his idea hasn't changed much since then. There still is the desire to gain status or prestige through buying and consuming of goods (Goldsmith et al. 1996).

children) or horizontally (from peers to peers) within social groups. Over time these cultural traits accumulate and lead to complex bodies of cultural knowledge that help us to create complex societies, develop sophisticated technologies and enable us to adapt to very distinct natural environments. Cordes (2019) provides a detailed overview on how gene-culture coevolution played a role in forming our unique adaptation for culture. Henrich (2016) explains how our ability to use socially transmitted information is “the secret of our success” as a species. The unique human ability to create complex cumulative culture seems to be much more important than individual cognition or learning when we want to explain how humans became the ecologically dominant species on earth.

For our argument here it is important to remember that much of our behavior, our norms and our preferences are shaped by our social environment. Our consumption behavior is no exception here. Henrich (2016) pictures this by an informative anecdote. A great share of our preferences for food is culturally transmitted and therefore acquired socially. An example is the preference for chili peppers. Chili peppers evolved to produce capsaicin as a defense mechanism and are naturally avoided by humans (and other mammals) because capsaicin directly activates the pain channel TrpV1. The effect is a burning pain similar to contact with high temperatures or acid. Children in the Mexican highlands learn to like chili peppers by reinterpreting this pain as a rewarding experience. They watch their parents and peers eating chili peppers and start to develop this food preference on their own without being pressured into it (Rozin & Schiller 1980). Of course, education in consumption behavior plays a big role as well. Children mostly learn what to consume and how to consume from their parents. Later in life, while reaching adolescence, peers become the favored source of information for learning and preferences may change accordingly (Moschis & Moore 1980). Cultural transmission of preferences is a strong force in establishing stable behavioral patterns and is even able to cope with experiences that are (at least initially) unpleasant.

The role of education has been acknowledged as a central column of sustainability policy (e.g. Cortese 2003; Lozano 2006; Nolet 2009). Contents and methodology of sustainability education have to be selected carefully depending on age cohorts, socio-economic and cultural background (e.g. Löw Bär 2018). Developmental psychology indicates that already very young children will interpret the regular observation of behavior of reference persons as norms (Schmidt & Tomasello 2012). Woersdorfer (2010) shows how the demand for washing machines and other tools that meet the human want for cleanliness are strongly governed by culturally transmitted social norms prevalent in the agents’ environment. Norm psychology is the underlying cognitive mechanism and may also be used to introduce and stabilize green preferences, for example, via socialization experiences of agents (potentially while attending school). Despite the importance of the subject, we cannot discuss the role of education and socialization at length here. A discussion on the relations of education,

norm formation and the internalization of preferences is given in Ensminger and Henrich (2014). They conclude that the influence of childhood experience on norm internalization and preference acquisition can hardly be overestimated and will dominate our (potentially green) preferences for the rest of our lives.

Over the last three decades, cultural evolution theory identified several main mechanisms of social transmission that seem to be universal across cultures and time (Henrich and McElreath 2003). A major finding is that social transmission is often biased: some cultural variants are adopted more frequently than others. Biased social transmission can be categorized into two subgroups: content and context biases. In content-based biases (or direct biases) inherent qualities of the cultural trait itself determine the acquisition of this trait (e.g. sweet taste of sugar will lead to a preference for food that consists of sugar). In context-based biases (or indirect biases) the social context is influencing the acquisition of cultural traits. Context biases in social learning can be differentiated into model-based biases and frequency-dependent bias. Figure 1 gives an overview of these major biases. However, biased social transmission is not the only force in cultural evolution: guided variation is another mechanism that helps to explain how certain cultural elements spread in populations of cultural learners (Boyd and Richerson 1985).

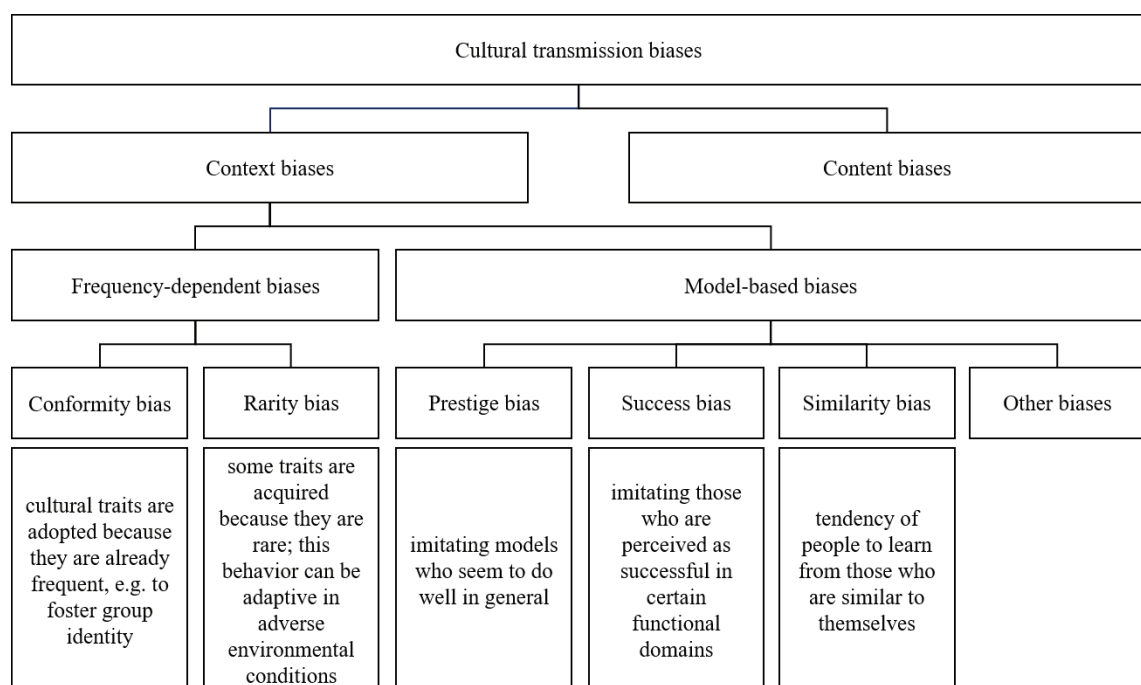


Figure 1: Overview of some major cultural transmission biases, discussed in Boyd & Richerson (1985) and Henrich & McElreath (2003).

There is consensus in the field of cultural evolution research that humans tend to learn cultural traits often by imitation of role models (model based biases) and by copying behavior of the majority (frequency-dependent biases) of persons in their social environment (see e.g. Boyd & Richerson 1985; Buenstorf & Cordes 2008; Henrich 2016; Mesoudi 2011). Social role models display traits that are more often imitated by others because of the role of the respective person within the social setting. For example, cultural traits shown by individuals who are perceived as charismatic, successful or prestigious are preferentially copied by others (Boyd and Richerson 1985; Henrich and Gil-White 2001). Since it is hard for our perception to distinguish what traits exactly are causal for the success of other people, we tend to acquire all kinds of habits from them.⁵ Imitating their behavior, wearing the same clothes, developing the same routines and acquiring the same preferences increases the chance to imitate the right trait and become successful as well. Therefore, if a role model starts showing a certain consumption behavior, other people will copy this consumption behavior based on the role model bias. Imitation, however, is not always sensitive to the context of the role models' success or prestige. Following role models in consumption may, therefore, lead to maladaptive effects and welfare losses (Cordes & Schubert 2013). Another behavioral universal is that we tend to imitate people who are similar to ourselves. Experiments show that behavior is more likely to be adopted from a person of the same sex (Bussey and Perry 1982), the same spoken language (Kinzler et al. 2009) or the same existing beliefs (Hilmert et al. 2006).

In frequency-dependent biases on the other hand, the relative frequency of a cultural trait within a social group influences its future diffusion. Frequency-dependent behavior relies on a certain number of people using a behavior or developing a preference. A new idea or change in behavior, like sustainable consumption, has to replace the status quo people are used to. Therefore, new ideas will usually grow slowly in a population. But if this idea or behavior is persistent and some people acquire the belief that this idea or behavior has some advantages (for themselves or for the environment), more people will adopt it. After a critical mass of people is reached the idea will be adopted by more and more people, even if these do not identify with this idea or behavior, but just because a lot of other people have already adopted it. This behavioral regularity is well known as "herd behavior" or conformity bias. People will start to copy all sorts of cultural variants (such as ideas, behaviors, preferences, etc.), most of their peers are using, because they are working as group markers and contribute to group identity. Imitating the majority also functions as a heuristic under uncertainty (see among many others: Richerson and Boyd 2005).

Unfortunately, social learning of preferences can be maladaptive as well. Culture makes people stick to their beliefs, even if it would be better to change their

⁵ This is why professional athletes are successfully selling us cars and electric shavers in media advertisements, while we can argue that these products are probably not the reason they are successful in the first place.

behavior. Diamond (2005) describes a historical example for maladaptive economic activity and unsustainable consumption in detail: sometime around the year 980 AD, the Norse arrived in Greenland and established a permanent colony there. For nearly 500 years this remote outpost of European civilization was maintained but in the 1400s the colony finally collapsed. The collapse of the Norse colony in Greenland is largely driven by the unwillingness of the Norse to adapt their lifestyle, especially their food preferences to the new environment. When they arrived in Greenland, they brought with them the knowledge, cultural values and agricultural technology that they had developed in Scandinavia. While these habits and economic behaviors were highly functional in their original homelands, it proved very unsustainable within this new environment: The Norse culture was persistent preventing them from changing their behaviors and preferences. Most strikingly, their culture and religion hindered them to learn from the Inuit, who had been living in this environment for thousands of years. Instead of learning from pagans and “wretches,” as they called them, they kept on operating on agricultural techniques which were not suitable in this environment. They also cut down all of the already sparse trees which resulted in further destruction of the natural vegetation and spoils. Then they prevented the regeneration of the vegetation by bringing in their traditional livestock, mostly cattle and sheep. Without the plant cover, the topsoil was quickly eroding by wind and water. Without firewood the Norse started burning animal bones and manure. These, therefore, could not be used anymore as a fertilizer, one of the few means to improve the productivity of the inferior Greenland soil. Accordingly, the Norse began to starve and started to eat their whole livestock and the colony collapsed in the end; this process was speeded up by some adverse changes in climate around this time.

Most surprisingly, the Norse never considered fish as a major food resource although it was plentiful available. Diamond presumes they didn't start fishing, because it wasn't part of their culture: only very poor people in Scandinavia had to rely on fish. The Norse therefore failed completely in adapting their culture of consumption to an environment that was very distinct to Scandinavia, where these cultural practices had evolved in the first place. Diamond indicates that this historical episode should remind us on what can happen, if cultural inertness leads to unsustainable economic activity.

Not only in cultural evolution, but also in biology we can observe maladaptive evolution. Ronald Fisher (1999) describes how some traits, like peacock feathers, can become exaggerated by sexual selection to an extent that they become maladaptive. Under certain conditions, the correlation between traits and preferences can get into a self-reinforcing process that increases indefinitely. Boyd & Richerson (1985) describe how indirectly biased transmission can result in a runaway process. Cultural evolution can lead to cultural mal-adaptations because it is usually difficult to anticipate whether cultural practices turn out to be adaptive, neutral or maladaptive in the long run (Chudek & Henrich 2011).

A similar runaway process of preference learning can be observed in status consumption. People start to compete for prestige and often spend a large share of income for this purpose. Unfortunately, many forms of status consumption are contributing very little to overall welfare (Frank 2007), but are very resource intensive and responsible for environmental degradation. Also, consumption for creating personal identity, for which there is a strong preference in humans, is targeted by marketing. As status consumption often operates on goods that are not necessarily characterized by their superior functional value (e.g. luxury cars & watches, consumer electronics, frequent long-distance travels or self-owned jets), policy could enhance in principle status consumption for sustainable goods and services. Indeed, there are many examples for conspicuous green or sustainable consumption already like the success of the Toyota Prius on the U.S. market (e.g. Griskevicius et al. 2010).⁶

4. An alternative road to future sustainability policy

More than 30 years ago the Brundtland commission report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Despite considerable progress in some areas, we are still on a global developmental path that is very different from the definition of sustainability above. We believe that the way we have learned to consume, especially in western high-income societies, has been and will be in future a major obstacle to reach the UN sustainability goals. Therefore, it is likely that it will not be enough to hope that the autonomous enlightened consumer will change her behavior spontaneously because of ethical reasoning. Nor will it help to taboo topics such as consumer sovereignty in political discourse (Norton 1998).

It is even less likely, of course, that producers will voluntarily contribute to a cut back of consumption in our present economic system. On the contrary, many industries are in desperate search of creating new needs and wants to avoid saturation of consumers and stagnation of sales. Modern marketing techniques are highly effective in altering and creating preferences by using celebrities as role models, address peer group effects and use social networks and social influencers to make use of social comparison, role model biases and frequency dependent behavior. Only national or supranational governments and policy seem to be in a position to induce changes that have a substantial and immediate impact. It is therefore of the utmost importance to develop suitable tools and methods that enable decision makers to design efficient measures to reduce the harmful consequences of unsustainable consumption. We therefore are especially in need for behaviorally-informed policies. Neoclassical approaches – including behavioral economics – cannot account for endogenous preference changes

⁶ There is substantial evidence that status consumption is closely linked to income inequality. Social policies that reduce inequality may therefore contribute indirectly to a reduction in conspicuous consumption (Jin et al. 2011; Kaus 2013).

in people and is therefore ill-suited to induce lasting cultural effects. In the end, neoclassical economics can only inform “weak sustainability” policies that can complement stronger forms of sustainability but cannot substitute for them.

Waring and Tremblay (2016) sketch a roadmap how understanding cultural evolution can be used as a framework that will help executives to reach sustainability goals. They argue, that policy does not suffer from a deficit in proper understanding how ecosystems work. However, they do lack a concept of how societies can adapt to the problems caused by overexploitation and unsustainable consumption. Their basic argument is that like in biological interaction where the natural habitat may be overstretched by overpopulation, behavior that is benefitting individuals may lead to harmful consequences at higher level of integration, such as groups of organisms or whole populations. In biological as well as in cultural evolution there exist no “invisible hand” that guarantees that maximizing individual well-being will translate into maximizing overall welfare. On the contrary, only groups or populations will sustain and survive, if they find ways to counteract individual overexploitation. In human cultural evolution we find many examples, how human populations can adapt to new environmental conditions and avoid overexploitation of resources. Research on a group of stakeholders in southern California who managed to cobble together a system to manage their water table shows that groups are capable of avoiding the tragedy of the commons without requiring top-down regulation (Ostrom 1990, 2010). The rules, traditions, norms and preferences on how to deal with environmental problems are transferred over and within generations via cultural transmission. Social entities that implemented these behaviors strongly were much more successful than others in the long run (this process is called cultural group selection). The main questions are now as follows: is it possible to induce the specific rules, norms or preferences for certain behaviors to foster a culture that will show sustainable consumption in the long run? Is it possible to create policies that will help people to learn to prefer sustainable consumption? As we have seen in section 3, biases in social transmission will lead to the diffusion of certain cultural variants. We argue that policy makers can make use of these biases in designing policies that will enhance the diffusion of green or sustainable preferences. We argue that a focus on the role-model bias and frequency-dependent behavior of peers should yield the best results. Using successful and prestigious people to show and support a preferred preference will lead to people following their example. Informing the population that a lot of people started to show these preferences will let even more people “follow the herd”. Cordes and Schwesinger (2014) show in a theoretical model, that the establishment of role models via media campaigns in combination with conformist transmission can induce lasting preference change in consumer populations. The politically induced preference change results in consumption decisions for green technologies and will be especially effective if this behavioral policy is complemented by traditional economic measures, such as providing subsidies and taxation.

In many realms, preferences are highly malleable by cultural forces. For instance, Beaman et al. (2012) provide empirical field evidence for a very significant role model effect in cultural transmission: if women are enabled by law to take respected roles or leadership positions in local populations, villagers in India start to appreciate higher educational attainments for females, thereby strongly affecting their later economic status. Similarly, La Ferrara et al. (2012) show how exposure to soap operas in which women had few children reduced fertility rates in Brazil. In these cases, fundamental human preferences concerning educational attainments or demographic preferences are subject to change by cultural learning forces. Suicide, to provide another telling example, is role model and prestige biased: when celebrities commit suicide, there is a subsequent spike in suicide rates (e.g., Jonas, 1992). Moreover, the cultural transmission of suicide is also subject to self-similarity biases: individuals who kill themselves soon after celebrities tend to match their models on sex, age, and ethnicity. Welsch and Kühling (2009) were able to demonstrate that the usage of solar thermal systems, the subscription to green electricity and the purchases of organic food are significantly altered by the consumption patterns of reference persons. This demonstrates how potent our cultural learning abilities are in forming our preferences. Of course, these channels can all be used by politicians or other agents of collective action as instruments to lastingly induce green preferences in a population of consumers.

Woersdorfer and Kaus (2011) show how peer effects and the imitation of neighbors influences the decision to invest in environmentally friendly housing technology in Germany. Babutsidze and Chai (2018) describe in a recent study how imitation and socially transmitted information drive the diffusion of greenhouse gas mitigation practices in Australian regions. Their study shows how the adoption of mitigation practices can spread in local neighborhoods via signaling green behavior⁷. Such bottom up approaches, however, can be complemented by policies at a larger level of integration, particularly if the already existing cultural value and norm system can be integrated into sustainability agendas. Waring and Tremblay (2016) discuss several cases, for example the national environmental policy of Bhutan. Bhutan has not only been successful at replacing a gross national happiness index for a gross national product indicator as a main measure of developmental success. It was also able to establish environmental protection policies based on Buddhist ethics that are widely accepted by the people of Bhutan, even in cases where these are inhibiting economic growth in the short run. While western societies are not blessed with such religious traditions, the evolved cognitive feature of norm psychology may help to introduce and stabilize green preferences. These societies could also rely on a tradition of individual political empowerment (e.g. Arendt 1958). Green political activism and grass-root

⁷ Making green consumption more visible will increase its adoption rates (Alcott 2011, Schubert 2017). This is in line with the long tradition on research on conspicuous consumption mentioned earlier (e.g. Kaus 2013).

movements may act as seed nucleus for more widespread political awareness of sustainability related problems.

A worthwhile approach in building up a more sustainability-oriented culture may also be to use the globally increased connectedness of people via social networks. Consumer business is already very active within social networks, such as Instagram, Twitter, Youtube or Facebook. Influencer marketing (Booth & Matic 2011) seems to be highly effective as it directly makes use of cultural transmission in virtual small scale networks via role models. As popular platforms such as Facebook have in recent years been facing legitimacy problems, e.g. because they were misused to manipulate preferences and opinions of people to influence national elections, it could be in their own interest to contribute to sustainable consumption campaigns as part of their CSR. Although our argument claims that traditional policy measures will not be sufficient to implement strong sustainability policies in the future, we think that they should complement cultural green preference formation. As we already discussed, education and socialization are central elements here. Unfortunately, it is still a niche topic in most educational programs in developed countries and it receives even less attention in developing states (e.g. Sterling 2013; Stephens et al. 2008). All resources that would be distributed to sustainability education are supposedly a superb investment in our future. At the same time, we need complementing policies from neoclassical and environmental economics. Taxation of harmful products and production techniques, subsidizing green technology and other forms of environmental regulation are necessary measures for future policy as well. In case of consumption, a progressive consumption tax probably would help to cut back overconsumption (e.g. Carlsson & Johanson-Stenman 2012, Witt 2011) – if accompanied by deep preference changes on the part of consumers (Schubert & Cordes 2013). Such a tax seems hard to implement with consumer preferences remaining unchanged, because – at least for democracies – majorities of voters have to accept these measures. Only a broader cultural change that alters consumer preferences substantially and fundamentally would support these policies in the long run. Cordes and Schwesinger (2014) suggest that such preference change is frequently following a S-shaped diffusion curve and depends on the establishment of a critical mass of people within a population, before the spread of green preferences will become self-reinforcing (see also Centola et al. 2018). Especially in the beginning, behavioral policies that address the change of preferences will require considerable investments and efforts, while initial adoption rates will stay relatively low. This will change, however, for prolonged campaigns and cultural transmission processes and potentially becomes a self-reinforcing process in later stages. Once preferences for responsible and green consumption behavior are widespread, policy can proceed in establishing even stronger policies (like progressive consumption taxes) that seem very hard to implement today. In case of Bhutan we see that it is not an unrealistic scenario: all depends on the underlying cultural transmission forces.

5. Concluding remarks

In this work we discussed the inappropriate scope of present mainstream environmental policy. While we appreciate the new behavioral angle of policy making that manifests itself in the application of green nudges, we showed that nudging will probably not contribute to long term sustainable behavior in consumption, as it is unable to address consumer preferences that are underlying consumption decisions. Instead, we argued that consumer preferences can be targeted via changes in consumer culture. We discussed several mechanisms that are able to induce preference change by making use of biased social transmission. We also stressed the point that the implementation of changes has to be sensitive to the level of integration and the level of cultural traits that are involved. We concluded that although conventional measures are inappropriate to achieve large-scale changes in consumption behavior, they will represent important complements of behavioral policies in future. Of eminent importance is increased effort in educating people how consumer behavior affects our ecosystems and natural environments by using various channels of cultural transmission. We did not enter, however, the discussion on problems related to paternalistic policy making (see for good summaries Binder & Lades 2015; Schubert 2017). Given the serious threats arising from overconsumption and our responsibility for future generations, we find supportive measures for pro-environmental preferences acquisition legitimate. Short-term consumer sovereignty is no higher good than a sustainable future for coming generations. We are convinced that human nature allows people to swallow the burning chili pepper of changed consumer preferences and develop a different culture in consumption if they are convinced that this will be in their long-term interest. Policies that facilitate learning to consume in a more sustainable way will be crucial in the decades to come.

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