

# *Evolutionary Economics And Economic Progress - A Naturalist Proposal*

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## **Abstract**

‘Economic progress’ is an important normative concept to make welfare statements. However, most such approaches are static, not only including behaviorally unsound assumptions, but also relying on the assumption of given and unchanging preferences. Given increasing income through innovations, new opportunities come into existence. This does not lend plausibility to the idea of unchanging preferences. The present paper wants to explore in how far a notion of economic progress can be maintained in an evolutionary economic, i.e. dynamic, perspective. We argue for the adoption of a position called ‘sensory utilitarianism’ and develop a two-sided criterion for progress, where the first part consists of an increase in the satisfaction of ‘innate wants’. The second part is justified by an openness-argument concerning the ‘opportunity to learn’, pertaining to institutional setups where people are given the possibility to learn about new opportunities.

Keywords: economic progress, welfare economics, learning, sensory utilitarianism

JEL-classification: B52, D63, I31

# 1 Introduction

“It is apparently a truer and more cheerful view that progress has been much more general than retrogression; that man has risen, though by slow and interrupted steps, from a lowly condition to the highest standard as yet attained by him in knowledge, morals, and religion.” (Darwin, 1871, p.184).

It has always been an important task of economics to assess individual and social welfare. The questions of what economic states should be considered ‘good’ and how better states could be reached have been central questions for economists to answer (Cooter and Rappoport, 1984; Sen, 1987). And whether economic states improve over time is the (moral) problem of ‘economic progress’. While in biology after Darwin, ‘progress’ can no longer be understood as a teleological process leading to (continuous) improvement towards a specified goal, economic progress still is an important normative concept. It can, for example, help us in making welfare statements.

But what is progress? Theories of economic growth maintained that rising national income is a measure for progress. *Prima facie*, this seems to be a plausible measure when exogenous and stable preferences are assumed. Unfortunately, to equate economic progress with rising income turned out to be a short-sighted and very narrow position, as has been shown by its critics (Easterlin, 1974; Scitovsky, 1976; Sen, 1985a).

Consider for example the cross-country findings of happiness research that have shown that happiness is only correlated with income below an average threshold of 10,000 USD per annum (Frey and Stutzer, 2002, p.75). And the relationship between income and happiness over time exhibits what has been called the “Easterlin paradox” or “hedonic treadmill” (Brickman and Campbell, 1971): Although incomes rise, happiness does not increase significantly (Easterlin, 1974, 2002).<sup>1</sup>

Other qualifications concern the rising standards of inequality that accompany rising incomes. It has been demonstrated in inequality research that often, growth (as captured by rising national income) does heavily benefit the rich while the poor are left out (Peach, 1987; Forbes, 2000; Scully, 2002). This is not only a phenomenon in developing economies: In the US, from 1973 to 2003 poverty rates have remained almost the same although real GDP has more than doubled over the same time period.<sup>2</sup> These problems have led to alternative accounts, where progress is constituted by rising social indicators (cf. Carley, 1981; Nissel, 1984, for an overview) or by an increase in capabilities (Sen, 1985a,b).

These approaches mentioned above are static in nature, most of them including not only behaviorally unsound assumptions (e.g. axioms of formal preference theory), but also relying

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<sup>1</sup>See also Oswald (1997), pp.1818-20, who reports a slight increase in happiness with increasing income over time for the US and Europe.

<sup>2</sup>Poverty was 11.1% in 1973 and 12.5% in 2003 (Bureau, 2006), while GDP increased by factor 2.39 from 4341.5 Billion USD to 10,397.2 Billion USD (of Economic Analysis, 2006).

on the assumption of given and unchanging preferences (given increasing income through innovations, new opportunities come into existence - this does not lend plausibility to the idea of unchanging preferences). If we adopt an evolutionary perspective, it seems no longer possible to maintain the assumption of exogenously given and static preferences (Witt, 1991, 2001). But if we accept the notion of changing preferences, we have to be aware of the fact that our measuring rod to assess welfare changes itself. This warrants an investigation whether it is still possible to make meaningful welfare assessments from such an evolutionary perspective. Secondly, it seems *prima facie* problematic to talk about 'progress' since that notion has come under attack by evolutionary theorists (cf. Nitecki, 1988, and the contributions therein).

This paper therefore wants to explore in how far a notion of (economic) progress can be maintained in an evolutionary economic perspective. We argue for the adoption of a position called 'sensory utilitarianism' and develop a two-sided criterion for economic progress within this framework (see below). Sensory utilitarianism is a position put forth by Ulrich Witt (Witt, 2000, 2005) which turns back to the hedonism of Jeremy Bentham (1789) as the basis for human well-being. It is trying to counter the poverty of contemporary utilitarianism in giving it a sound naturalistic basis and thus turning it somewhat more objective: Utility is derived from actions that give humans pleasure (or pain). These are sensory experiences that can be observed and possibly even measured (Kahneman et al., 1997). Furthermore, utility is not a homogeneous measure, as Witt links it to a theory of wants (Witt, 2001). These wants are partly genetically fixed (with the usual genetic diversity) and partly acquired through (genetically programmed) learning processes. The latter processes thus are the 'transition laws' to make sense of systematically changing wants (preferences). Contrary to other utilitarian accounts, sensory utilitarianism is thus dynamic and firmly rooted in sound behavioral assumptions.

We go on to argue that from within this framework, progress can be generally seen as an increase in the satisfaction of human wants. However, due to the two different sets of wants and their differing importance for human life, the argument will be that primary importance lies in the satisfaction of primary innate wants (which are shared by everyone; this is the downward part of the criterion since it aims at the basis of human wants). Here similarities to the basic needs approach are apparent. However, given somewhat equal satisfaction of basic wants (as can be the case in local groups or cultures) the second, upward, part of the criterion is of importance: since acquired wants are learned by humans and are thus markedly different even in culturally similar groups, we sketch an openness-argument concerning the 'opportunity to learn'. *In nuce*, we will propose to say that progress can be linked to institutional and economic setups where people are given more opportunities to learn either new wants or how to satisfy them. As such, the argument is in favor (although with some qualifications) of fostering diversity and innovations since in innovative regimes, more opportunities to learn new wants or the means of their satisfaction are given.

The paper proceeds as follows. In section two, we discuss the notion of ‘progress’ with a focus on evolutionary theorizing. We take into account philosophical and biological findings as a *prolegomenon* to define a proper notion of economic progress in section three. In section four, we go on to discuss an interesting contribution toward a dynamic notion of economic progress, namely Carl Christian von Weizsäcker’s idea of ‘adaptive Pareto-optimality’ (Weizsäcker, 1971, 2001, 2005b). This dynamic version of a Pareto criterion is a first important step toward the right direction. It has some shortcomings, however, concerning the assumptions that led to it and it still relies on income as a measuring rod for welfare. Keeping in mind these problematic aspects, section five presents our normative framework based on neo-sensory utilitarianism and inspired by the capability and functionings approach of Amartya Sen. Section six sketches how our notion of progress could be applied and discusses some extensions for innovation policy. Section seven concludes.

## 2 On the Notion of ‘Progress’

The notion of ‘progress’ is inherently problematic for a variety of reasons, most notably the teleological connotation evoking the idea of betterment toward some goal. It is therefore important to gain a proper understanding of this notion and the context we use it in. The notion of progress has gained its prominent role during the Enlightenment (Wright, 1997, p.5). The 17<sup>th</sup> and 18<sup>th</sup> centuries have been times of optimism which prompted their thinkers to believe in the “inevitability of progress” (cf. Jones (1980), pp.1-9, quote on page 3, see also Friedman (2005), Chp.2). Most often, progress had a very strong ethical note. For example, it was extensively discussed by the German romantic philosophers (notably Fichte, Schelling and Hegel) as ‘social progress’: For these thinkers, history was a process of human betterment and social progress implied that human societies improved over time in respect to their members. This idea of societal progress culminated in ‘social darwinism’ most prominently defended by Herbert Spencer (1857)<sup>3</sup> and Auguste Comte. Indeed, until today, this semantic heritage is present in our notion of progress insofar that it does not only denote change but also betterment.<sup>4</sup>

Let us dwell on these two characteristics of progress a little longer. It seems clear that the idea of progress implies change over time. We can only talk about progress when we compare two states at different points in time. But obviously, *vice versa*, change does not necessarily imply progress. We therefore need the second component of progress which is an evaluative (normative) component that allows to judge whether a systematic change from one state of a system to another constitutes an improvement relative to some criterion (Ayala, 1988, pp.76-9). Progress thus clearly has a descriptive component (stating a systematic change that has occurred) and the normative component (evaluating whether the subsequent state is better than

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<sup>3</sup>See on this also Richards (1988).

<sup>4</sup>On the history of the idea of ‘progress’ cf. more extensively Nisbet (1994).

the previous one). We denote with  $m_t$  the members of a sequence of states (temporally ordered from  $t = 0$  to  $t = n$ ) and with  $p_t$  the measure of the feature denoted by the criterion of progress at state  $t$ . Note that there is no objective, external notion of progress we can adhere to when assessing whether for example an economic state  $m_{t=1}$  is progressive compared to the original state  $m_{t=0}$ . Let us then say, that progress can be understood as a change from  $m_{t=0}$  to  $m_{t=1}$ , where  $p_1$  is evaluated as better than  $p_0$  relative to some criterion of progress (and this criterion need not be a moral one).

Let us further keep in mind two auxiliary dimensions of progress, viz. its *continuity* and *scope* (Ayala, 1988, pp.79-81): By continuity, it is distinguished that either a development proceeds uniformly toward the better over different time points ( $\forall t : p_{t+1} > p_t$ ), or there is net progress from start point to end point but regress somewhere in between (the mathematical regression of  $p$  on time is significantly positive). The scope of progress on the other hand refers to whether the concept is applicable during a part of the sequence (particular progress) or for the whole sequence, i.e. from  $t = 0$  to  $t = n$  (general progress).

Having now established a general definition of progress with two relevant characteristics, we have to make some qualifications. Obviously, the notion of progress we have introduced stands and falls with the criterion of progress. Consider, for example, the influential definition by Arthur Lovejoy, who identifies progress with

“the tendency inherent in nature or in man to pass through a regular sequence of stages of development in past, present and future, the later stages being - with perhaps occasional retardations or minor retrogressions - superior to the earlier”  
Lovejoy and Boas (1935).

Or consider Herbert Spencer’s definition that “[p]rogress is not an accident, not a thing within human control, but a beneficent necessity” (Spencer, 1857, p.484) and a “grand progression which is now bearing Humanity onwards to perfection” (Spencer, 1855, p.620).<sup>5</sup>

These definitions are so all-encompassing that it seems impossible to empirically verify them (Nisbet, 1994, p.6). They have come under attack as

“noxious, culturally embedded, untestable, nonoperational, intractable idea[s] that must be replaced if we wish to understand the patterns of history” (Gould, 1988, p.319).

Indeed, many philosophers of science are highly critical of the notion of progress (in varying disciplines as well as overall progress) because of such highly contentious definitions that have been prominent in human thinking for quite some time. Take for example evolutionary theorizing and the question of progress in (biological) evolution. Although this is a category of progress that is *prima facie* not fraught with moral overtones, it still is largely disputed that

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<sup>5</sup>On Spencer’s notion of progress relative to Darwin cf. more extensively Richards (1988).

such a notion is helpful (see Hull, Provine, Ruse, Gould in Nitecki, 1988; Sartorius, 2001): It is not clear what criterion of progress should be used (effectiveness of adaptation to the environment, morphological complexity, amount of genetic information, longevity of taxa, . . . ), and depending on the selection of criteria, there has been progress or not.<sup>6</sup>

In the course of the following paper, we will have to be very careful about what constitutes a valid criterion of progress so as not to make out so broad a version of progress that it is susceptible to the criticisms mentioned in this section. We explicitly want to emphasize that from now on, when talking about progress, we limit ourselves to the sphere of economics (“limited progress”, cf. also Nitecki (1988), p.22). And although we will have to consider different value judgments (and thus embed moral content in the notion of progress), this paper is dealing with progress only insofar as it is ‘economic progress’ (which is to be defined in the following sections).

### 3 Economic Progress

We have seen that any definition of progress requires certain value judgments. This is no less the case for economic progress (Blondel, 1997, p.91). Let us see how economists conceive of economic progress: As already stated in the introduction, it seems natural to associate economic progress with economic growth (measured for example by income, see e.g. Friedman, 2005).

Joseph Schumpeter (1942), in his seminal work on capitalist development linked economic progress to innovative activity, when talking about the “perennial gale of creative destruction” (ibid., p.84) leading to an increase in the “standard of living of the masses”. Thus, following Witt, we can define “Schumpeterian Progress” as the

“significant long run increase in per capita real income in all percentiles of the income distribution resulting from innovative activities in the economy.” (Witt, 1996, p.116)

Almost all notions of economic progress focus on an increase in wealth or income of the individuals. In the context of ‘Schumpeterian Progress’, and underlying the definition above, there is the assumption that innovativeness leads to increases in productivity and an extension of consumption possibilities. Thus innovativeness is beneficial and welfare enhancing. Subscribing to the causal relationship between innovativeness and welfare, the question then becomes what are the conditions of ‘Schumpeterian Progress’, notably, which institutional arrangements should be advocated to foster innovativeness and thus economic progress. Before briefly turning to that question in section 6, however, we want to point the attention to difficulties in relation to the notion of ‘Schumpeterian Progress’ and propose a different perspective on economic progress. There are three problems associated with the concept (see Witt, 1996, p.116):

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<sup>6</sup>The most prominent disputers of progress in biological evolution are Gould (1986), Lewontin (1979), and Dawkins (1986), pp.218-222

First, an increase in wealth is only an approximation for the stipulated increase in welfare that constitutes economic progress. Obviously, wealth *per se* is only instrumental, as it serves to satisfy an individual's wants. The approximation of welfare by income or wealth leads to the problems mentioned in the introduction as the relationship between wealth and welfare is by no means simple and linear.

Second, Schumpeterian progress defined as average increase in standard of living over the long run means that on the one hand, only in average do individuals experience an increase in their standard of living. And on the other hand, the increase occurs only in the long run. The first qualification means that Schumpeterian progress can leave out individuals who do not profit from innovations and thus have no increase in wealth. The second qualification means that even those who do profit in the long run, might face (severe) decreases of wealth in the short or medium run.

Third, Schumpeterian progress is an *ex post facto* concept. By evidence from the last centuries, Schumpeterian progress has occurred due to an increase in innovativeness. But it is not clear what exactly the necessary and sufficient conditions for a future occurrence of Schumpeterian progress are.

Note that this idea of economic progress is strictly instrumentalist because it is not questioned what ends are served with the increase in income. This focus on means seems to be crucial for the economic perspective on progress (as opposed to moral progress, where an improvement pertains to ends, not means). The genuine economic perspective deals with improvements in efficiency: Kenneth E. Boulding defines economic development or progress as the

“discovery and application of better ways of doing things to satisfy our wants.”  
(Boulding, 1958, p.23)

Although he thinks it to be necessary, what he does not include is a critique of human wants (*ibid.*). This discrepancy of the purely instrumentalist view on economic progress is another reason for the fact that although we encounter efficiency gains and economic growth, it is debatable whether there has been truly made economic progress.

So far, we have examined theories of economic progress under the simplifying assumptions of given and static preferences.<sup>7</sup> However, this assumption is not innocent for some reasons: Firstly, a static approach to welfare economics is a severe shortcoming in a constantly changing (i.e. dynamic) world. When preferences change (which cannot really be doubted, cf. Witt, 1991, 2001)<sup>8</sup>, criteria based on stable and given preferences can produce problematic results:

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<sup>7</sup>Some of those assumptions are needed for mathematical tractability (Witt, 1991; Warke, 2000).

<sup>8</sup>Cf., however, Becker (1996) and Stigler and Becker (1977) who treat preferences as stable and equal across individuals and ingeniously explain what usually would be considered a preference change as a change in consumption capital.

For example, policy advice derived from a static analysis might be by and large wrong (Keen, 2001, Chp.8).

On the other hand, the assumption of static preferences becomes questionable when considering the very essence of innovativeness (Witt, 1996, p.114). Obviously, when consumers face hitherto unknown consumption possibilities that have come into existence through innovations, this can only mean that a preference for something new is acquired or an old taste changes. To assume that individuals always have the same preferences would indeed make innovations obsolete as long as they are not concerned with increasing the efficiency of already known products. For example, in a static world we can make sense of an innovation that leads to cheaper bikes because of a more efficient production process. It is however difficult to explain, why individuals should adopt the consumption of a totally new (and previously unknown) product, if they had not acquired a preference for it upon learning of its existence.

## 4 Progress with Adaptive Preferences

But is it possible to speak of progress when preferences change? When assuming static preferences, a criterion of progress could be easily developed because the measuring rod of progress would be the unchanging individual preferences. Thus, state  $A_1$  could be compared to state  $A_0$  concerning the fulfillment of the same preferences. This is no longer the case when the measuring rod for welfare changes itself. Are both states under this assumption still comparable?

The approach of von Weizsäcker addresses this question. For him, exogenous preferences are a methodological simplification but an unsuited approach for evolutionary theorizing (Weizsäcker, 2005a, pp.44-5). He thus wants to develop an account of adaptive preferences and their welfare implications (which he deems suited for evolutionary welfare economics<sup>9</sup>). For him, the main problem of endogenous preferences lies in their connection with the economic methodology of normative individualism, i.e. the view that collective actions and social decisions should be derived from individual preferences. When preferences change endogenously, the ‘measuring rod’ of welfare economics does change over time and that makes it difficult to derive welfare judgments (Weizsäcker, 2005b, p.2). To make (intertemporal) intrapersonal comparisons of welfare, von Weizsäcker develops a model where preferences adapt to past consumption vectors (Weizsäcker, 1971, 2001, 2005a,b).

This mechanism of adaptive, or reference-dependent, preferences has been introduced by Elster (1982). Von Weizsäcker uses this concept to incorporate endogenously changing preferences into an intertemporal model. However, we have to be aware of the fact that this kind of preference is quite restrictive: Preferences of an individual are dependent on the states the individual has been in in the past. For example,  $(A; B) (>) (C; B)$ , means that an individual prefers state  $A$  to  $C$ , given that the individual’s past state has been  $B$ . The axiom of adaptive

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<sup>9</sup>See on this also Weizsäcker (2001), pp.426-7.



preferences can now be formulated as: *Let  $(B; A) (>) (A; A)$ , then  $(B; B) (>) (A; B)$* . If adaptive preferences are defined in such a way, it is not possible to have a situation where an individual prefers  $A$  when adapted to  $B$  and prefers  $B$  when adapted to  $A$  ('non-circularity').

The core of von Weizsäcker's model is the concept of the "improvement path", a path through time in which the standard of living of a person does never decrease and at least at some points does increase. Von Weizsäcker postulates the following *axiom of progress*: A person prefers an improvement path on which his real income increases over a path where it stagnates or decreases. This criterion is a measure of economic progress, insofar as only movements in time that satisfy the improvement axiom are considered economic progress. Von Weizsäcker's model results in an ordering of the commodity space that allows to maintain a notion of progress although preferences change.

It is evident that this concept is sort of a meta-preference (Weizsäcker, 2005a, p.49)<sup>10</sup>, in a very minimalistic sense, since von Weizsäcker assumes that one compares improvement paths and chooses the best of all locally possible paths to follow according to a meta-preference, which makes value judgments about different preferences (Weizsäcker, 2005b, p.11). Ultimately, it is this meta-ranking which is considered normatively relevant for the notion of progress.

Von Weizsäcker's concept is a dynamic version of Pareto optimality. It is a very minimal standard of welfare judgment.<sup>11</sup> Indeed, we can consider it a "law of motion" of preferences (ibid.: 2), but it can be criticized along several different paths:

First of all, improvement paths are, as the Pareto criterion, very restrictive and conservative in policy analysis. There might well be welfare improvement paths which lead to an initial decrease in the standard of living but to a very high standard of living later on. It is not clear why individuals would not want to follow such a path. Second, von Weizsäcker does not part with orthodox methodology (though he claims otherwise) in several respects: For example does he equate welfare with material well-being, viz. income. His model uses orthodox assumptions of (full) rationality and though he claims that it could be expanded to incorporate bounded rationality (Weizsäcker, 2001, pp.440-1), he does not follow this way beyond mere hints. Another point would be his assumption of 'non-circularity' of improvement paths which is the central assumption of adaptive preferences. This assumption rules out what von Weizsäcker calls the 'Lucky Hans'-phenomenon, where preferences would change such that at some point in time they would again be the original preferences from where change started: A situation where  $(A; B) (>) (B; B)$  and  $(B; A) (>) (A; A)$  is excluded *a priori*. This seems to be an important assumption for his model to work, but it is by no means an innocent assumption: von Weizsäcker does acknowledge that this belittles the value inherent in change, something which

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<sup>10</sup>Following Harsanyi's welfare economic terminology, it is an "extended preference" as it compares different histories of preference changes (Harsanyi, 1955).

<sup>11</sup>Von Weizsäcker acknowledges that his concept of adaptive preferences models preference change as conservative and resistant to change (Weizsäcker, 2005b, p.5).

strikes as odd for a dynamic theory of preference change (Weizsäcker, 2005b, pp.4-6). Fourthly, von Weizsäcker does not say anything about content and formation of preferences, except that preferences are influenced by past consumption. This, however, is not substantiated but simply assumed, so that we are left with an interesting formal model but lacking material enrichment of welfare economics that would lead to meaningful analyses concerning personal well-being in different economic states. Note as well, that the assumption of adaptive preferences prohibits some welfare comparisons: If two states  $A$  and  $B$  in the commodity space are separated by non-convexities (i.e. consumption vectors in  $A$  and  $B$  are in different subsets of the commodity space and while preferences in these subsets are convex, they are separated by a non-convexity) then von Weizsäcker's theory cannot compare them because there is neither an improvement path from  $A$  to  $B$  nor *vice versa* (Weizsäcker, 2005a, pp.55-6).

## 5 A Naturalistic Notion of Progress

'Sensory Utilitarianism' is the name of a position first developed by Jeremy Bentham (1789) and revived by Ulrich Witt in a series of papers Witt (2000, 2001, 2005). It is, in the present form, a positive theory of demand that we will use as the basis for normative correlates. Witt wants to counter the poverty of contemporary utilitarianism. The indigence of the utilitarian position, so the argument, comes from the "hollowness of utility" (Samuelson, 1947, p.91) caused by the reduction of the original Benthamite framework of a hedonistic utilitarian calculus, based on sensory underpinnings, to an abstract homogeneous index number. This move can be seen to originate with Jevons (1871), who aimed at a mathematical description of utility theory inspired by 19<sup>th</sup> century physics (Mirowski, 1988, Chp.1).<sup>12</sup>

Sensory utilitarianism revokes Jevons' modifications and provides utility theory and preference theory with sound behavioral foundations. Such a 'naturalization' of utilitarianism, i.e. reconstructing utilitarianism with methodological naturalism, provides a sounder basis for economic theory and allows for material conjectures about human economic behavior, which do not contradict empirical findings of the behavioral sciences.<sup>13</sup> It wants to answer such questions as: What is utility? Where does it come from? Does it change over time etc?

The main characteristic of sensory utilitarianism is the return to the hedonic qualities of utility: We experience utility as a sensory episode of pleasurable perceptions. In detail, the theory reinstates three features of Bentham's utilitarianism, which had been abandoned earlier. These are the following: Firstly, utility is derived from actions, not commodities. Secondly,

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<sup>12</sup>In the process of increasing the theory's "mathematical fitness" (Warke, 2000), severe modifications have led to a decrease in its material content, culminating (in positivist times) in the theory of revealed preference and the formal axioms of preference theory, which practically leave utility theory without any similarities to empirical reality (Witt, 1991; Gowdy, 2004).

<sup>13</sup>The approach is inspired by a desire for a unification of the knowledge of different disciplines. For such an understanding Edward O. Wilson has coined the term "consilience" (Wilson, 1998).

utility is not a homogeneous abstract index number. And thirdly, utility can be observed and be measured despite its subjective nature.

To derive utility from the outcome of actions, and not commodities, is a revocation that has been proposed by Kahneman et al. (1997). The authors show that utility can be connected to temporally distinct episodes. This is not unimportant since pleasurable experiences are not necessarily connected with commodities *per se*. Often, we derive “procedural utility” (Frey et al., 2004) from mere participation (where no commodities are involved). In the same paper, Kahneman et al. further show how utility as a sensory experience can be observed and measured.<sup>14</sup>

The probably most distinctive of the three features of sensory utilitarianism is, however, the naturalization of preference theory. Adopting insights from psychology, Witt suggests a theory of wants where the satisfaction of different wants entails different pleasures so that utility is no longer a compound homogeneous measure.<sup>15</sup> As this is an important feature of the theory, we will dwell a little longer on this theory of wants: The idea of humans having a set or hierarchy of needs is not new. Precursors can be found in Platon’s Republic; in economics, attempts were those of Menger (1871) and Georgescu-Roegen (1954). The problem with these attempts is, however, that they rely on *prima facie* intuitive ideas of such an account without relying on actual findings from psychology and other sciences to substantiate their claims.<sup>16</sup>

Witt’s theory of wants provides such a foundation when linking the concept of wants to very well established results from psychology: Wants are behavioral dispositions (Witt, 2001, p.26) that derive from a state of deprivation in an organism. When a want is not satisfied, i.e. deprivation occurs, the organism experiences unpleasant sensory perceptions. On the other hand, the satisfaction of a want causes a pleasant sensory experience and is thus positively reinforced.<sup>17</sup> It cannot be the aim to provide an updated list of Bentham’s different pleasures, but such wants include the ones for air, food, warmth, social recognition etc. (cf. Millenson, 1967, p.368, for a more comprehensive list). These wants can be divided into two subsets. The first subset of so-called ‘innate wants’ consists of all those wants which we are genetically endowed with. This means that all humans share this set of wants (with the usual genetic variance). It is a finite set that possibly contains only a small number of wants, such as those mentioned above. On the other hand, there are ‘acquired wants’ which are formed through individual and social

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<sup>14</sup>Kahneman et al. (1997) even hint at the possibility of making interpersonal comparisons of utility (ibid., pp.379-80 and 383), though this seems very speculative at the moment.

<sup>15</sup>Note, however, that this proposal leads to an enormous increase in complexity of the underlying utility theory. If such a theory would be mathematically tractable is questionable, however, for an attempt at such a formulation cf. Georgescu-Roegen (1954) or Wadman (2000, Chp.6).

<sup>16</sup>In psychology, a hierarchy of needs has been prominently suggested by Maslow (1954). However, it seems rather difficult to empirically validate that there indeed exists a structured hierarchy of needs (Wahba and Bridwell, 2002, pp.61-4). It therefore seems to be more promising to drop the idea of a hierarchy in favor of a set of interrelated needs (or, synonymously: wants, motives). A recent example of this approach would be Reiss (2000).

<sup>17</sup>As such, those wants correspond to what in psychology is called “reinforcers” (Skinner, 1953, Chps.5&6).

learning processes. This learning takes place via innate learning mechanisms Bandura (such as e.g. imitational learning, cf. 1986, Chp.2), again a feature of our genetic endowment that everyone shares.

It is clear that while those learning mechanisms are elementary behavioral programs that are genetically coded and thus common to all humans (cf. Lumsden and Wilson, 1981; Pulliam and Dunford, 1980, Chps.2&3), the wants that are formed through them can be different from individual to individual. And moreover, there can be a huge variety of acquired wants (Witt, 2005, p.16) that is path-dependent and culturally conditioned (i.e. the subjectively formed structure of acquired wants in an individual depends on temporal and cultural factors): “a huge interpersonal variety of idiosyncratic acquired wants is likely to result” (ibid.).<sup>18</sup>

The learning of new wants is the element which makes ‘sensory utilitarianism’ a dynamic, evolutionary theory. To cope with this change of wants, the idea is to use the learning mechanisms mentioned above as the ‘transition laws’ which govern the systematic change in tastes and motives.

With the positive theory mentioned above, we come to new questions that become relevant in the context of economic progress. While, as discussed in the previous sections, with exogenous preferences, only increases in efficiency or increases in income can be plausibly used as candidates for economic progress, we are now able to make substantive conjectures about the content of human preferences. This allows us to make value judgments as to whether the satisfaction of different preferences should be accorded normative weight in the assessment of economic progress. Note, that we are shifting emphasis from the traditional supply side focus of progress (i.e. innovations foster economic growth and thus constitute progress in raising the standard of living of the society) to a demand side perspective of economic progress.

As long as we want to uphold the principle of normative individualism, i.e. the principle that it is individual preferences that matter in assessing an individual’s well-being, we cannot stick to the notion of exogenously given and stable preferences. What a person desires changes over her lifetime as well as her appraisal of her well-being. Sensory utilitarianism offers the positive hypotheses of how human preferences change over time (via learning of new wants or via learning of new ways of serving them, i.e. learning new consumption knowledge). Besides these ‘laws of motion’ for preference change, sensory utilitarianism furthermore makes substantial hypotheses about the content of human preferences (albeit on a quite low level of innate wants). For example wants for air, caloric intake, cognitive arousal etc. are materially specified preferences. Both features are essential when judging whether a preference should be accorded normative weight (cf. also Elster (1982), p.237 and Sumner (1996), p.168 who argue for the importance of such a historical approach to preference change).

Let us now examine how far we can come in sketching such a normative theory with the

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<sup>18</sup>Georgescu-Roegen (1954, p.517) argues that these wants should be similar for members of the same cultures or societies. However, he does not substantiate this claim beyond its mere *prima facie* plausibility.

elements discussed above. We assess a person's well-being during a time period  $t$  as the net total of pleasurable experiences over painful experiences derived from the satisfaction of wants (pleasures) or from deprivation (pains). This is the core of the neo-hedonistic framework we suggest. Note that the pleasures gained by the satisfaction of different wants are of very different qualities and the satisfaction of wants is not related to the consumption of commodities alone. Sensory experiences are derived from actions, such as the consumption of goods and services. Moreover, sensory experiences can stem from other actions as well (a point in case would be the 'procedural utility' individuals enjoy when exercising their autonomy in voting, or choice in general, cf. Frey et al., 2004).

We thus assume an activity vector  $\vec{a} \in A$  which contains the set of all possible activities. We map this vector in the vector of characteristics via  $c(\bullet)$  so that  $\vec{c} = c(\bullet)$  is a vector in the characteristics space (Lancaster, 1966; Gorman, 1980). What we now have are the different characteristics of an action. For example, the participation to a colonoscopy<sup>19</sup> has the characteristic of causing an episode of physical pain but could also have the positive characteristic of doing something positive for one's health by taking a preventive medical measure (i.e. causing pleasure from the satisfaction of a want for bodily integrity).

The next step consists of linking those different action characteristics to the set of wants of an individual. We have seen that an individual has as set of innate wants as well as a learned set of acquired wants. Keep in mind, that the former vector of innate wants is common to all humans (with usual genetic variance), while the latter vector is heavily dependent upon socialization and culture. Now let us put aside the acquired wants for a while (we will take them up again later).

If we consider that innate wants are commonly shared by all individuals, we have a reference point for our framework. Our ethical premiss is: *A valuable human life consists in having these basic wants fulfilled.* From an egalitarian perspective, the idea is that every person should be allowed the equal capability to get pleasurable experiences from the satisfaction of her basic wants.<sup>20</sup>

Note also, that a normative focus on innate wants as the objects of intrinsic value for our well-being has an objective dimension that is better founded than other allegedly objective accounts of welfare can claim.<sup>21</sup> We follow John Harsanyi in arguing that the list of commonly shared innate wants constitutes "an interesting *empirical fact* about human nature, which seems to be of some importance for ethics." (Harsanyi, 1997, p.139, emphasis in original)<sup>22</sup>

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<sup>19</sup>This vivid example has been used by Kahneman et al. (1997) in their important work on 'objective utility'.

<sup>20</sup>This is similar to the 'basic needs' approach (Streeten and Burki, 1978; Chichilnisky, 1980; Streeten, 1984). However, it is routed in very well established psychological findings.

<sup>21</sup>This problem is encountered with Sen's or Nussbaum's 'functionings approach', Rawls' 'primary goods' and Harsanyi's 'substantive goods' (Sen, 1985a,b; Nussbaum, 2000; Rawls, 1971; Harsanyi, 1997).

<sup>22</sup>Contrary to the account of Witt, Harsanyi postulates his list with reference to psychological findings without so much as to give any references for his claims. Our point here is that Harsanyi's normative

Putting together what has been said so far, we thus formulate

$$\vec{w} = w_i(c(\vec{a}) | k_i) \quad (1)$$

This vector measures the achieved well-being, i.e. the degree of pleasurable experiences derived from the satisfaction of innate wants through certain activities. Function  $w_i(\bullet) \in W$  is a conversion function which converts the characteristics profile of a certain activity vector into the ‘satisfaction vector’  $\vec{w}$ . The conversion depends the accumulated consumption knowledge  $k_i$  of the individual. The intuition behind this is that an individual’s consumption knowledge heavily influences how that individual can satisfy his innate wants. If someone has never learned that an activity  $a$  can yield the satisfaction of such and such want (and thus cause pleasant sensory experiences), the person is beyond the opportunity to have that experiences. Indeed, beside the parameter for consumption knowledge, there could be other influences that do allow parameterizing some ‘objective’ correction factors that would otherwise bias the sensory well-being function (these can comprise in our case of adaptation and habituation effects etc.).<sup>23</sup> They could be used thus as factors that correct for informational deficits, individual and social constraints etc. Note that those factors introduce some objective components in our measurement exercise. We can further denote the opportunity set of a person as in (2), depending on the constraints in the form of activities and consumption knowledge  $(A_i, k_i)$ .

$$O_i(A_i) = \{\vec{w}_i | \vec{w}_i = w_i(c(\vec{a}) | k_i) \forall w_i \in W_i \wedge \forall \vec{a}_i \in A_i\} \quad (2)$$

Concentrating on basic wants as normatively relevant has some important advantages. First of all, basic wants are shared by everyone. That means giving them normative weight does satisfy our egalitarian intuitions (moreover, these wants are universal in humans and not culturally specific). Secondly, basic wants include all things that are necessary for a healthy life (being healthy, nourished, well-sheltered, etc.).

Furthermore, this list of wants is more comprehensive than for example welfare measures centered only on physical bodily needs. This becomes clear when considering the want for cognitive arousal (vulgo ‘entertainment’) or the want for social recognition. Usually, those wants cannot be found in the basic needs approach.<sup>24</sup> And as every learned want is always associated with at least on innate want on which it is conditioned, the set of basic wants forms a quite important category of meta-preferences.

As has been noted, this framework is inspired by the capability and functionings approach of Amartya Sen insofar as it wants to reconcile the outcome centered focus with a perspective

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argument is valid and the necessary foundations and backing are provided by ‘sensory utilitarianism’.

<sup>23</sup>This would have to be specified in greater detail in future work.

<sup>24</sup>However, the present approach still restricts us to the normative analysis of very basic categories of welfare. Thus, an extension of the framework can be reached by extending the set of normatively relevant wants to some acquired wants as well. Due to space limitations, we cannot elaborate on this point any further.

on opportunities as well. However, while in the literature on Sen's approach there is usually a focus on opportunities as freedoms to act (i.e. equation (2)), in our approach, the focus lies primarily on the outcome-perspective, viz. the satisfaction of innate wants (equation (1)).

It has to be noted that the exclusive reliance on opportunities as a basis for welfare judgments, as for example also Sugden (2004) suggests, seems to be a popular (although mostly implicitly held) view of evolutionary economists, who value variation *per se*. However, it can be disputed that variation is always good and that opportunities should be the sole normative maximand since variation often has benefits and costs as well. Therefore, a framework like the one presented here, that occupies a middle ground between outcomes and opportunities is an appealing option from an evolutionary economics point of view as well.

With this framework, we are now able to specify a notion of economic progress. An economic state  $m_{t=1}$  is termed progressive over  $m_{t=0}$  if

- (1.1) There has been an increase in satisfaction of innate wants for at least one individual without decreasing the want satisfaction of the other individuals<sup>25</sup> (*Pareto Optimality concerning Satisfaction of Innate Wants*) or
- (1.2) There has been an increase in the opportunity set of alternative satisfaction vectors of innate wants for at least one individual without decreasing the respective opportunity sets of the other individuals (*Pareto Optimality concerning Opportunities*).

This part of the criterion is *restrictive* as it is based on the notion of Pareto Optimality. As it concerns an important subset of human wants, our argument is that no individual should be deprived of the equal opportunities to satisfy her innate wants. A situation in which some are better off concerning the basic wants while others are left worse off regarding basic wants is thus not a situation of economic progress. Note also, that this set of wants is not changed by innovativeness; only the ways of serving these wants can change due to innovations, i.e. new or better ways of satisfying our wants can increase/decrease the opportunity set or lead to increases/decreases of well-being.

The second part of the criterion is less restrictive, however, since it concerns our set of acquired wants. As these wants are different over individuals and are learned during life-time, they have a different normative status in our framework. An economic state at  $m_{t=1}$  is termed progressive over  $m_{t=0}$ , if *the first part of the criterion holds* and additionally

- (2.1) There has been a net increase in satisfaction of acquired wants (i.e. the increase in satisfaction of acquired wants by some people exceeds the decrease by others).

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<sup>25</sup>An 'increase in satisfaction of innate wants' is deliberately vague. To operationalize this notion, further assumptions are needed concerning whether pleasures from different wants can be aggregated, whether a complete ordering is possible or whether a partial ordering would suffice, etc. To measure this satisfaction of innate wants, a suitable approximation could be the objective happiness suggested by Kahneman et al. (1997). This cannot be elaborated here due to space limitations.

(2.2) There has been a net increase in opportunities concerning the satisfaction of acquired wants (as in 2.1).

The intuition behind the second part of the criterion could be called an ‘openness-argument for the opportunity to learn’: During our lifetime, we acquire a legion of new wants that are conditioned on our innate wants. For example instead of simply eating a meal, we acquire a taste for dining in expensive exotic restaurants. Having the opportunity to acquire such a taste is certainly morally not reproachable. Anyone should be given the possibility to acquire what tastes he or she wants to have, i.e. have the opportunity to learn.<sup>26</sup> However, once such a want has been acquired, we might experience a decrease in well-being if that want cannot be satisfied regularly in the future. Now, while no one should be restricted in what tastes he wants to acquire over his life-time, it can certainly be not the case, that the deprivation felt from not being able to satisfy an expensive acquired taste should be normatively relevant in assessing overall welfare. As such, clear priority is given to basic wants and their satisfaction, to which everyone should be equally entitled. This entails of course that with given resources, any state with higher fulfillment of (1.1) and (1.2) is more progressive as with lower fulfillment of innate wants but more acquired wants being fulfilled.

Having given this definition of economic progress from a naturalistic perspective, we will turn to a discussion of some of its implications and of the conditions for future economic progress in the next section.

## 6 Implications, Applications and Outlook

Let us examine some of the features and virtues of the position sketched in the section above. Some qualifications seem in order.

First of all, the above definition of economic progress is clearly based on the value judgment that human inborn innate wants should have normative priority in assessing welfare and thus in defining what development constitutes progress. We have made a point that income is too crude an approximation for the conceptualization of progress. The idea was to link economic progress more directly to the ultimate end of economic activity, namely the satisfaction of wants.

Secondly, we have used more realistic assumptions about the content and formation of human preferences. As acquired wants are culturally conditioned, they are accorded less normative weight in the evaluation. However, in future work, common acquired wants could be identified that might be used as an extended basis for judging economic progress. But this raises some questions: While it seems uncontroversial that everyone should be entitled to the satisfaction of her basic wants to a reasonable amount, the question what normative status should acquired wants be accorded is more difficult to answer. To a large extent, these wants are socially and

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<sup>26</sup>Excepting all those wants which have amply been discussed in the welfare theoretic literature as being anti-social, self-destructive, self-deceptive, etc. Cf. on this issue also Schubert (2005).



culturally different. Furthermore, they are easily malleable through social conditioning, informational deficits and biases (it seems furthermore, that it is much easier to overrule willfully an acquired want, i.e. abstain from satisfying it, than it is the case for innate wants). However, there might be an overlap of acquired wants in different cultures that might allow making out some subset of acquired wants that is shared by most individuals of a society as well. From a moral perspective, these wants could be included in the framework above. However, it could be conjectured that they should only be included as “informed wants”, i.e. only those wants should be morally relevant that would have been acquired had the individual complete information and made full use of it (Harsanyi, 1982, 1997, p.133).

Thirdly, and concerning the question of distributive justice, one could argue that from a radical redistributive point of view, the above criterion could easily be modified to make a case that any shift of well-being and opportunities away from part (2) to part (1) would constitute economic progress, i.e. taking away resources and income from those who mainly satisfy acquired wants would count as progress without there being an increase in overall endowments at all. This is clearly a deviation from other theories of economic progress who link the notion to economic growth. In our framework, progress is not only a matter of production but also one of distribution. However, how radical this redistribution should be would have to be discussed more carefully and extensively in future work. The basis for such an argument for redistribution from the affluent to the poor is given in this naturalistic position.<sup>27</sup>

Fourthly, are there limits to progress? Though it is beyond the scope of the present paper, one potential limit is inspired by findings about how humans cope with different amounts of variety of choice. To exemplify, we could surmise that there might be an upper limit to the increase in well-being we get from an increased opportunity set (Loewenstein, 1999; Schwartz, 2000), as with an increasing number of choices, humans tend to develop increased regret aversion concerning the number of alternatives not chosen.

This has been aptly called “multi-option treadmill” (Binswanger, 2006, pp.370-3), because although we constantly face increasing options, happiness does not increase significantly. Binswanger has found three different kinds of constraints to be responsible for this treadmill, viz. firstly an information constraint (more options require more information for decision making and thus higher search and filter costs), secondly a constraint in mental accounting (we are not able to properly account pleasures and pains associated with all the options which makes us prone for non-optimal decisions) and lastly a time constraint (although options increase, our time budget does not and so we have to forgo many options which we do regret then).

Indeed, taking these findings into account casts doubt on the widely held conviction that more options and variety are good *per se*. While this belief might be the case for industries (cf. Cohen and Malerba, 2001), a notion of economic progress centering on the individual would possibly have to acknowledge that there are limits to variety, where increased options do not

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<sup>27</sup>A similar case for redistribution but with other justification has been already made by Pigou (1929).

increase welfare. Again, this would point at increasing the options of those who are still not as privileged as the affluent.

One last remark concerning the conditions of economic progress seems in order. From our definition of economic progress emerges a different emphasis on conditions of progress: Institutional setups that would enable progress here would center not purely on fostering innovativeness and diversity. Policies would aim at enabling individuals to increasingly satisfy their innate wants. This does not automatically call for increasing their incomes, but to increase their conditions of life (Myrdal, 1974, p.734). Increased satisfaction of wants is not necessarily connected to increased per capita incomes but also to good environmental (e.g. low pollution) and social conditions (e.g. the possibility for meaningful work to satisfy the want for social recognition of the jobless). Other policy implications might concern the transfers of technology from affluent to poorer countries (thus increasing consumption knowledge via better consumption technologies) and educational efforts.

Most of these implications are not new, but in the naturalistic framework, it becomes easier to understand that economic growth and performance are not important *per se* but serve ultimately the end of increasing human well-being (cf. Oswald, 1997, p.1815, for a similar point).

## 7 Conclusion

Although the notion of progress in general has been identified as somewhat problematic due to implicit value judgments and unclear content, the notion of economic progress is a valid concept to assess the change in welfare over time. It has been argued, that once we leave the safe haven of exogenous and stable preferences, however, it becomes more difficult to maintain the concept since the measuring rod for welfare changes itself. In this context, progress as an increase in real income (over 'improvement paths') has been discussed for the case of adaptive preference formation. Once we come to a more realistic theory of how preferences are acquired and change, we are able to make sense of a different notion of progress, namely in the form a two-sided criterion of satisfaction of innate wants and the enactment of 'opportunities to learn'. From the naturalistic perspective spelled out, we could make the case for fostering innovations (although in a more limited fashion than is generally taken for granted in the literature on innovation policy). Some implications of the work have been hinted at, prompting for future research.

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