

Witt, Ulrich

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**Cultural Evolution,
Economic Growth and Human Welfare
– A Drift Process?**

by

Ulrich Witt

Max Planck Institute of Economics
Evolutionary Economics Group
Kahlaische Str. 10
07745 Jena, Germany
Fax: ++49-3641-686868

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please contact: evopapers@econ.mpg.de

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Cultural Evolution, Economic Growth and Human Welfare – A Drift Process?

Ulrich Witt *)

Max-Planck-Institute of Economics
Jena, Germany
Ulrich.Witt@evoecon.mpg.de

abstract

To assess whether and when the equation “economic growth = better life” holds, it is necessary to understand what human motivations drive the economic growth process. The preference subjectivism of canonical welfare economics is of little help here as it treats the motivations underlying individual behavior as an unexplained “black box”. The present paper therefore reviews several motivational hypotheses suggested by biology, behavioral science, and cognitive psychology. They point to a strong influence of cognitive and non-cognitive learning processes on the underlying motivations or, in economic terminology, the emergence and change of individual preferences. As a consequence, subjective welfare assessments tend to follow a drift process once a certain level of prosperity has been accomplished by economic growth. The normative relevance of the resulting preference relativism is argued to be particularly momentous, if the value basis of normative judgments is extended beyond the welfare criterion to justice and fairness considerations.

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I. Introduction

With their historically unprecedented growth of per capita income the past 150 years have improved the human lot dramatically – by now showing effect even in laggard countries (Maddison 2001). Where in earlier times “Nature’s parsimony”, as Ricardo once put it, regularly meant poverty, drudgery, and malady – in short: struggle for existence – human living conditions in the advanced economies have now reached a standard that, some 150 years ago, hardly anybody would have dared to hope for. In face of these improvements, can there be a doubt that further economic growth should be cherished as a condition of making life even better?

It is a remarkable fact that, in the most advanced economies, some doubts and concerns do arise. They find expression in, among other indications, the “greening” of politics. To a large extent, the concerns are motivated by an increasing awareness of the extensive negative externalities, particularly the environmental degradations, which the process of economic growth has caused so far. But it is not only insight in the lacking sustainability of exponential growth due to an ultimately constrained human niche. There are also rising doubts expressed, e.g., by Jackson (2009) and Latouche (2009) as to whether the quest for improving life by further economic growth is still so pressing that it is worth the costs (a question that the less well-to-do may well consider be cynical (see Chang 2006).

The question points to a deeper issue. What is the rationale that has driven economic growth? Is there an ultimate end that all economic growth serves? And is the normative validity or acceptance of that end independent of how much growth there has already been? Economic growth is a facet of cultural evolution which, in turn, is a continuation of evolution in nature – with different means and rules (Witt 2003, Chap. 1). One of the big differences is that evolution in nature does not follow any intentions or motivations. Yet, both cultural evolution and economics growth can be argued to do, as both are driven by human choices, whether made consciously or unconsciously. The proviso is of course that the diverse intentions and motivations underlying these choices jointly induce the process to move in a direction that can be characterized in more general terms as serving the same ultimate end(s). For many facets of cultural evolution such a rationale may not always be easy to identify. (As is well known, for example, the intentions pursued can often be found to result in unintended outcomes.) In the case of economic growth, in contrast, the proviso seems to be met.

The myriad of activities contributing to economic growth can be argued to ultimately serve one purpose: the quest for a better life. In the perspective of economics, all intentions and motivations pursued in the production and exchange process to generate opportunities, profits, and income – economically momentous as they are – can be interpreted as having instrumental status only. The ultimate end of all production and exchange activities is to improve ones well-being – usually by being able to command greater amounts of resources to satisfy one’s preferences.

As a driving force behind economic growth this logic intuitively stands to reason as long as the challenge is to overcome poverty, drudgery, and malady. But once this objective challenge has been mastered to a reasonable degree, the logic of commanding greater amounts of resource refers to something different from objective degrees of poverty, drudgery, and malady. Economic growth then serves improvements in *subjective* well-being, i.e. a better satisfaction of subjective preferences. Is this difference the reason for the mentioned doubts in the very rationale of economic growth cropping up among many

well-to-do? Or are these doubts but a change of the subjective preference themselves reflecting an emerging satiation? To explain what is going on here and to assess the normative relevance, it is necessary to discuss in more detail the motivational underpinnings of human behavior that drive economic growth.

To make progress here, the paper proceeds as follows. Section 2 begins with a brief overview on how the problems just mentioned relate to the debate in economics more generally and welfare economics in particular. As turns out, economic theory offers hardly any material hypotheses on which a discussion of the motivations driving economic growth could be based. In response to this situation, it is suggested here to inquiry into hypotheses offered by neighboring disciplines – evolutionary biology, behavioral sciences, and cognitive psychology – that relate to the motivational underpinnings. Section 3 therefore starts with a discussion of the non-cognitive motivational forces underlying human behavior. To a large extent they can be argued to have a genetic background. The same holds for the systematic changes the motivations thus triggered undergo endogenously over time. Section 4 turns to the cognitive motivational forces and their influence on human behavior. It is shown that there is again an endogenous dynamics of change implied. Section 5 explores the relevance that the identified endogenous changes in motivational forces have when it comes to assessing what economic growth, as a special facet of cultural evolution, is good for. The discussion will be cast here in the economic language of preference satisfaction or welfare criteria. As will turn out, the suggested motivational hypotheses imply a certain preference relativism or preference drift conjecture with puzzling normative implications. Section 6 offers the conclusions.

2. Economic Growth and the Perspective of Welfare Economics

Economic growth is closely intertwined with cultural evolution. The latter, in turn, is the result of various human dispositions and attitudes and their various adaptations with their influence on how human groups interact with their environment and transform it over time. Among the various dispositions and attitudes some can be assumed to be part of the human genetic endowment. Others have evolved in a more or less unconscious socialization and collective learning process in which traditions, rules, and social norms emerge, are handed down, and varied from generation to generation. An increasingly important source of cultural adaptations is, of course, also human deliberation and insight. The distinction of these three sources of cultural evolution is center stage in the three-layer theory of cultural evolution proposed by Hayek (1971; 1988, Chap.1) in which he emphasizes, in particular, the role that traditions, rules of conduct, and norms play – the layer “between instinct and reason” as he calls it. For him it is these evolved institutional features that made possible a deepening of the division of labor, specialization, and capital accumulation on which economic growth depends.

More recent empirical studies of different historical and cultural contexts indeed prove an intense mutual dependence particularly between the institutional impact of cultural evolution and economic growth (see, e.g., Glaeser et. al 2004, ####, #####). However, neither Hayek nor the more recent empirical studies address the question of what intentions or motivations drive the process of cultural evolution and, in particular, economic growth. Economic growth that happens – more or less so depending on the institutional circumstances – is implicitly taken to be something inherently good – independent of the prosperity and its distribution already been accomplished. Yet, without specifying what preferences or, for that matter, needs, wants, goals are pursued by the

economic agents, how can it be inferred that ever more economic growth is an improvement?

Modern economic welfare theory (the branch of economics occupied with the normative assessment of the consequences of economic growth) is not of much help in this endeavor. Its “gold standard” is still the Paretian *dictum* that a relaxation of the income constraint of at least one individual always results in a welfare gain (as long as nobody else is thus made worse of – as it would be the case, for example, in a zero-sum game). The underlying idea is that an extension of an individual’s feasible opportunity set to opportunities which the individual subjectively values higher – something obviously correlated with a rising real income – is always enabling a better life. Yet, this *dictum* not only presupposes that all individuals have insatiable preferences, i.e. are motivated to make efforts to get ever more of what they prefer. It is usually also based on the assumption of unchanging and consistent individual preferences (see Sen 1977 for an early critique).

In recent years, evidence from many experiments and field studies has, however, questioned the empirical validity of these assumptions. From research in the newly emerging field of behavioral economics it has been inferred that individual preferences or, for that matter, individual utility assessments are more complex than previously assumed (Kahneman et al. 1997), not consistent (Ariely 2009), and not invariably given (Elster 1982). Findings like these do not suit the Paretian welfare calculus. Moreover, they indicate that the equation “economic growth = better life” is more difficult to rectify analytically in terms of individual welfare judgments than it may appear.

The challenges have led to attempts in behavioral economics to replace standard welfare theory by some (weaker) approaches that account in one way or other for the real complexity of human preferences (Sugden 2004, von Weizsaecker 2005, Bernheim and Rangel 2009). However, all these approaches share with the canonical version of welfare theory that, in constructing conditions for welfare improvement, they refrain from specifying what it is that people prefer and what is supposed to improve their life. Like in textbook economics, preferences just satisfy formal requirements which ensure that the individuals respond “well behaved” to an extension of their opportunity set.

Thus, while the mentioned behavioral welfare theories manage to get along without strong consistency and stability assumptions, they still lack motivational hypotheses.¹ Except for risk, time, and social preferences, the motivational underpinnings of human behavior have so far been neglected (with a few notable exceptions such as Kahneman et al. 1997; Lowenstein 2000 and 2004). It can be argued, however, that an understanding of the rationale of economic growth is hardly possible without a more detailed grasp of the human motivations driving it. The subsequent section will take a fresh look at explanatory hypotheses suggested in the human sciences more generally. In the language of economics this amounts to an attempt to fill the formal theories of preferences and utility with material content. Ultimately, the purpose of the exercise is to lay the ground for discussing where economic growth is heading for.

¹ Motivational hypotheses are hypotheses that “... describe why a person in a given situation selects one response over another or makes a given response with greater energization or frequency”, Bargh et al. (2010, p. 286).

3. Innate Elements of Human Motivation

While the utilitarian approach to human behavior has ever more been transformed into an analytically advanced, but empirically rather poor, axiomatic theory, the behavioral and human sciences developed in a different direction. Based on their naturalistic view of human nature, they have seen in recent decades the emergence of powerful new theoretical paradigms such as sociobiology (Trivers 1985), evolutionary psychology (Buss 2003), and even a new sensory hedonism (Kahneman, Diener, and Schwartz 1999). These new developments substantially improved the understanding of human behavior. E.O. Wilson (1998), one of the protagonists of sociobiology, argues that these developments provide connecting principles by which the vast body of knowledge about human behavior accumulated in the sciences can be tied together. The connecting principles are directly relevant also for the social sciences and economics and, in particular, their motivational underpinnings. Wilson writes (*ibid.* 204-205):

“To infuse psychology and biology into economic and other social theory ... means teasing out and examining microscopically the delicate concepts of utility, by asking why people ultimately lean toward certain choices, and being so predisposed, why and under what circumstances they act upon them.”

To overcome the present limitations of formal modern utility theory it seems promising to take up these impulses and to reconstruct human motivation by taking possible genetic influences into account.² Starting from the evolved underpinnings of human behavior, hypotheses can then be formulated about how, and in what direction, behavior is adapted in the process of cultural evolution. Let us assume, thus, that not only the physical traits of the individual exemplars of a species, are innate, i.e. genetically determined, but also some elementary patterns of behavior. If so, they most likely have emerged by natural selection on the basis of genetic adaptation. They may, or may not, continue to be shaped by natural selection. This depends on the intensity of selection pressure that the species is exposed to. (If selection pressure is high, genetically coded behavior that provides an advantage in accessing scarce resources such as food, territory, status, mating partners results in differential reproductive success of its carrier and will be selected for.)

While for early human phylogeny it appears likely that selection pressure was high, it seems to have slackened in more recent times. In fact, today differential access to resources does not seem to have the clear effect on reproduction chances that it had for most of human history.³ Most human cultures – rich and poor – are now able to master their environment to such an extent that they have attained a status of “reproductive affluence” (Wilson 1975, p.550). Based on this observation, a core hypothesis of evolutionary psychology seems plausible: that the human genetic endowment in general and the innate patterns of behavior in particular are basically those shaped by adaptations

² For a discussion of this strategy see also Witt (1985), (1991), (1999), (2003, Chap. 1), and (2012).

³ Maddison (2001, Chap. 1) shows in a cross country comparison that the more per capita income in real terms increased from 1820 to 1998, the more both birth rates and population growth went down. In pre-industrial societies, in contrast, there is still some evidence for a positive correlation, cf., e.g., Chagnon and Irons (1979).

to environmental conditions in the earlier phases of human phylogeny. With respect to the motivational underpinnings, two very elementary, *non-cognitive* features of human behavior seem to be remnants inherited from those times. The one is the role that the deprivation of needs plays as an elementary motivator of action. The other are the elementary learning processes of instrumental conditioning and conditioned reinforcement. The two features are closely intertwined.

As far as the physiological needs of an organism are concerned, a state of deprivation is easily identified. It occurs as a consequence of some physiological tension, deficiency, or imbalance, such as the feeling of hunger when the organism's metabolism lacks energy in the form of nutrition. Deprivation with respect to some need motivates the organism to act to reduce or remove deprivation (as, e.g., in the case of hunger, a motivation for foraging behavior is triggered). Deprivation, and thus the motivation to act, vanishes when the corresponding needs are satiated. Deprivation not only occurs with respect to obvious physiological needs such as those for air, water, sleep, food, body heat, sex. An organism can also be programmed to experience deprivation with respect to such things as physical activity, affection, care, arousal of the senses or the cognitive system, self-consistency, and social status recognition – needs in a wider sense.

Removal or reduction of deprivation of all these needs is an instance of primary reinforcement in the sense of the theory of instrumental or operant conditioning.⁴ A corollary of this theory is the conditioned reinforcement or conditioning learning hypothesis (Leslie 1996, Chap. 2). Conditioning learning works as follows. Let an action A_i reduce deprivation of an innate need as mentioned. As it triggers a rewarding experience, A_i is subject to primary reinforcement. Let an action A_j trigger a neutral, i.e. neither rewarding nor aversive, experience. Assume further that A_i and A_j repeatedly coincide so that an association is learned between the consequences of the two. By such an association, carrying out A_j tends to become rewarding in itself. This means that a conditioned (secondary or acquired) reinforcer emerges that motivates action in its own right. Once established, it continues to be effective even if the coincidence with originally conditioning primary reinforcement is getting infrequent.

As the satisfaction of *innate needs* is identified here with primary reinforcement, conditioned reinforcers can be identified with what may be called the satisfaction of *acquired wants*. A major difference between the two is that in the case of conditioned reinforcers the motivation to act is contingent on the deprivation of the primary reinforcers on which they have been conditioned. This means that for acquired wants there is no own state of deprivation motivating action and, by the same token, no specific level at which satiation is reached.

Given the powerful associative capacity of the human brain it is easy to imagine that an elaborate structure of conditioned reinforcement can emerge in this way over an individual's life time from the few innate reinforcers. Unlike the widely inter-personally shared innate needs that are causal to this structure, the acquired (conditioned) wants are highly idiosyncratic and show a corresponding inter-personal variance. Nonetheless, given the strong influence that the particular cultural environment of an agent has on what conditioned associations she or he happens to be learn, there are also some culture-specific

⁴ Staddon and Cerruti (2003). Note, however, that need deprivation and its reduction is not a necessary condition for reinforcement to occur in the behavior of a species.

commonalities in the wants individually acquired. Even though it would make little sense to produce a list of acquired wants comparable to that of the limited number of innate needs, individuals in similarly socialized groups show less variety in their learned reinforcers than agents from different backgrounds. This effect is an important non-cognitive constituent of cultural evolution.

In order to later be able to assess the welfare implications it is useful to connect these hypotheses to a utilitarian interpretation. Reduction or removal of need deprivation can be identified with a pleasurable (rewarding) sensory perceptions (Cabanac 1992). By the definition given by sensory utilitarianism it can be inferred that utility originates from the rewarding sensory stimuli connected with the satisfaction of innate needs and acquired wants. By comparison, canonical utility theory claims that, in making choices (under given constraints), individuals always allocate behavior to the different action opportunities they have in a way that maximizes utility. This means that they are supposed to choose the most rewarding feasible combination of satisfying needs and wants. But how does an individual learn about the relative rewards (or utility)? And does that learning – a non-cognitive learning at this stage – indeed result in the postulated optimal allocation of behavior?

The connection that has just been made between utility and need and want satisfaction can be extended. The satisfaction of need and want is a reinforcing event. Hence, (non-cognitive) learning about how utility can be obtained can be expected to follow the dynamics of behavior adaptation under reinforcement as described by instrumental conditioning. Assume the feasible ways of allocating behavior to the satisfaction of needs and wants differ with respect to how rewarding they are, i.e. how much utility they allow to derive. If so, the more rewarding actions tend to be chosen more frequently than less rewarding ones. Consequently, the learning process tends to convergence to an allocation of behavior that follows the “matching law” (Herrnstein 1990, Leslie 1996, Chap. 10) This law states that the frequency distribution over the actions matches the size distribution of reward the actions yield.⁵ In summarizing we can formulate for choices made with no or only negligible cognitive participation:

Hypothesis 1 After adaptation, behavior follows a frequency distribution over the actions that reflects different motivational forces:

- (i) the relative degrees of average deprivation an individual experiences with respect to the innate needs which can be served under the given constraints,
- (ii) the learned association with conditioned reinforcers, i.e. the strength of acquired wants.

In other words, the motivation underlying behaviors (i) and (ii) is informed by potential utility. In contrast, the actually observed choices also hinge on the relative efficacy of the different, feasible actions in reducing deprivation as experienced under instrumental conditioning or *actual* utility.

⁵ The matching law has been confirmed in numerous laboratory experiments with animals and humans (Davison and McCarthy 1988) – not least because the number of deprived needs can quite easily be controlled and manipulated. The isolated need satisfaction that can be artificially arranged in controlled laboratory experiments is, of course, not the kind of situation economic agents are faced with in reality.

With the increasing satisfaction of a basic need, assumed here to become feasible with a increased resource spending, the relative degree of deprivation (potential utility) of that need decreases. It vanishes when the satiation level is reached. However, the satiation trajectory is not the same for all innate needs. For acquired wants a satiation trajectory is not defined. To wrap up:

Hypothesis 2 The motivational force (i) varies between innate needs in such a way that for some needs the satiation level can more easily be reached than for others when the resource constraint is expanded. The motivational force (ii) is not subject to an intrinsic satiation level.

4. The Role of Cognition

Animal behavior is supposed to be subject to instinctive and conditioned responses alone. Human behavior is more complex so that instinctive and/or conditioned responses only represent a kind of base-line behavior. It is therefore not necessarily the instantaneous strength of sensory perceptions alone (“instant utility” in the terminology of Kahneman et al. 1997) that determines behavior, particularly in the economic context. The baseline motivation forces enumerated in Hypothesis 1 can be mediated by intervening cognitive reflections. In these reflections, expected future sensory perceptions play a role as do means-ends considerations. They are backed by learning at the cognitive level through own experience or by observing others creating, and/or adapting to, new action opportunities.⁶ Cognitive deliberation thus intervenes in complex ways into the discussed elementary relationships between utility on the one hand and action motivation and action probability on the other.

An example given by Kahneman et al. (1997) in their measurement of instant utility may illustrate the difference. The authors report data for the intense pain that a colonoscopy treatment can cause in patients, undoubtably a very strong sensory experience. An action capable of reducing an instantaneously dominating feeling like this would be a most rewarding experience and, hence, be most likely to occur. Indeed, the instinctive response is escape behavior as it would be observed with probability close to one for dogs or monkeys, say. Colonoscopy can therefore only be applied on animals, if either the pain is suppressed by anesthetics or the animal’s body is mechanically fixed. For humans, in contrast, this is not necessary. By their cognitive abilities they are able to intervene into the instinctive reaction pattern. Once they start reflecting their situation, they can recognize the instrumental character of the colonoscopic treatment for avoiding future painful experiences and motivate themselves to suffer the pain now, provided they do not discount future pains too much in the trade-off with present pains.

To account for the cognitive influences on human behavior it is useful to start with the role of cognitive goals with an own motivational force. If these goals are successfully pursued, this results in a rewarding experience (Bargh et al. 2010). In part, these goals seem to reflect innate needs like that for a positive self-image (Gollwitzer and Kirchhoff 1998). If one realizes or suspects that one’s own self-image clashes with how one is seen by

⁶ Humans can use their unique emphatic capacity to put themselves in the shoes of others and infer what preferences and intentions others pursue (Tomassello 2009) and to learn from their success or failure in a vicarious way (Bandura 1986, Chap. 2).

others, particularly one's peers, a cognitive dissonance arises. It can be interpreted as a situation of need deprivation that induces an often very strong motivation to act to reduce the dissonance. This can be accomplished by actions meant to impress others and to make them change their perception or by compensatory actions by which one tries to assure oneself of one's own, positive self-image.

In part, however, the goals represent cognitively constructed motives. In the context of extended means-ends-relationships possible actions are not only assessed with respect to their functional value for attaining need satisfaction. Functionality considerations can also result in goal setting in its own right. This is evident where round about production and investment are undertaken to eventually be able to better serve needs and wants. But cognitive goal setting is also significant for consumption activities, particularly where high income supports a life style based on a sophisticated, highly functionally differentiated consumption technology. Cognitively constructed action-goal relationships may, e.g., be informed by convenience or redundancy reasons or by the belief in the functional value of product differentiations.

For example, in the case of footwear, one pair of shoes was for centuries considered sufficient to serve all purposes in which feet needed protection (the ultimate underlying need). Now there are functionally differentiated shoes for casual home use, representative purposes, working requirements, leisure activities (walking, hiking, tennis, ...), fashion-based status-signaling, etc. Their functional differentiation motivates multiple purchases of shoes meant to serve the cognitively constructed motive of taking advantage of special functionalities (which need to be comprehended in the first place).⁷ The pursuit of cognitively constructed motives such as honoring functional differences has no intrinsic satiation level as the ultimately underlying need of protecting one feet has it. But the pursuit hinges on the strength of belief in the functional value.

An important feature of cognitively constructed motives is their contingency on a process of co-evolution of cognitive and non-cognitive influences. The key for understanding this co-evolutionary process lies in how cognitive attention is allocated as a consequence of constrained human information processing. If information is abundantly entering the cognitive system, spontaneous attention processes need to be selective with respect to what particular information is processed further and eventually stored in memory. What pieces of incoming information grab attention depends on both their sensory attributes and their meaning-based attributes (cf. Anderson 2000, Chap. 3, 6, and 7). Meaning is identified through tracing information from memory where knowledge is stored that has previously been accumulated. In order to retrieve elements from memory they need to be activated selectively through cognitive cues contained in messages. Only messages that contain cues for which there is an associative basis in memory can have a meaningful interpretation and can attract attention. Ultimately, the change of individual knowledge therefore hinges on what knowledge has already been acquired before.

The meaning associated with a particular piece of information often has affective connotations of liking or disliking. The latter can be a reflection of previous rewarding or aversive experiences (as discussed in the previous section). In economic terminology, the

⁷ Accordingly, Frenzel Baudisch (2006) finds that, in the U.S., footwear turns from a necessity (with income elasticity below 1) into a luxury (income elasticity greater than 1) in the mid 1970s when product differentiation and brand registration in footwear started to increase steeply.

affective connotations of a piece of information then depend on how individual preferences have developed in the past. The more an individual has developed a preference for some action rather than another one through instrumental conditioning and conditioning learning, the more affective weight she or he is likely to attribute to the meaning of a piece of information relating to that action. When attention is more likely paid to incoming information that is affection-laden because of already developed preference, this has an effect on how individual knowledge develops. If information related to a particular item or event attracts more attention, then that information also tends to be more frequently attended and rehearsed in thinking and, hence, to be better cognitively represented in the individual's action knowledge held in memory.

Thus, two mutually supportive effects interact in establishing a co-evolution of knowledge and preference changes. One effect is the affection-driven impact of the current preferences on the selective allocation of attention and the incremental change of knowledge. The other effect is the one that selective attention and gradually changing knowledge have on the individual's further reinforcement history (and, hence, on the formation and further development of her or his preferences).⁸ The flip side of the described co-evolution is the relative neglect of, and the rising ignorance with respect to, other information. Memory traces that allow to retrieve a particular piece of information can only be established and maintained at the expense of memory traces to other pieces of information. The less frequently and the less intensively attention is paid to an item or event, the less likely it will be represented in the individual's action knowledge and get a chance of being involved in instrumental conditioning.

For the cognitive part of human motivation we thus get two additional hypotheses:

Hypothesis 3 A further motivational force underlying human behavior is
(iii) the pursuit of cognitively constructed motives.

Hypothesis 4 This motivational force is not subject to intrinsic satiation, but it hinges on the strength of belief in the action-goal relationships.

As a consequence of the pursuit of cognitively constructed motives, deliberation often intervenes into the non-conscious baseline behavior patterns. The motives themselves are subject to an own dynamics of endogenous change which is due to selective attentional processes guiding human information processing. More specifically:

Hypothesis 5 Since only actions from the currently perceived choice set can be chosen and lead to (more or less) rewarding experiences that feed back on preferences and knowledge, both preferences over, and knowledge of, action-goal relationships tend to get ever more specialized and detailed.

If, as a result of increasing attention, perceptions become more refined and more responsive to slight differences in the stimuli, ever more special attributes of action-goal relationships can be grasped. This may be called a "refinement" effect" (Witt 2001) working

⁸ Communication with, and the observation of others is an important factor in shaping individual attention processes (Bandura 1986, Chap.2). Information is more likely noticed and memorized if it relates to objects of intense communication. Since the intensity of communication follows social agenda-setting effects, there is also a self-amplifying tendency in what information is given attention to in closely communicating groups.

on both preferences and action knowledge. Because of the limited information processing capacity the flip side of the specialization is an increasing neglect of alternative action-goal relationships.

5. Motivational Drift and Human Welfare

As has been mentioned in the introduction, economic growth ultimately serves the end of a greater individual command of resources to satisfy the individuals' preferences, i.e. the satisfaction of innate needs, of learned wants, and the pursuit of cognitively constructed motives. In the more recent past, the activities thus motivated have brought about an expansion of the human niche and a more effective exploitation of nature. Even though the multi-faceted cultural evolution has not always been functional to this end (see, e.g., Diamond 1999), economic growth that was made possible has eased the burden of poverty, drudgery, and malady. Can it be expected that a continued economic growth will continue to enhance individual welfare as in the past?

There are certainly enough poor countries and people still suffering from significant poverty, drudgery, and malady for which a rising income would undoubtedly mean an increase of welfare. However, this fact only points to the necessity of paying attention to the level of income already reached when the question of welfare improvements is discussed. Once the income level is sufficiently high, other aims than overcoming poverty, drudgery, and malady get ever more important for subjective well-being or welfare. To explain how economic growth affects welfare, depending on how much growth there has been already, it is therefore necessary to inquire in more detail into how the various motivational forces change with the resources available for their satisfaction. In the preference subjectivism of modern preference theory such an inquiry is not feasible. Information sufficient for an assessment is, however, provided in the Hypotheses 1 - 5 in the previous sections.⁹

Let us turn first to the level of innate needs (case (i) in Hypothesis 1). With a strongly increasing income it becomes feasible to eliminate deprivation on average for the needs that are comparatively easily satiable. The obvious case is the need for food. Accordingly, by Hypothesis 2 the motivation to spend additional income on goods serving those needs declines comparatively quickly (which amounts to an income elasticity < 1). By the same token, welfare gains that can be realized if consumption of such goods is expanded further vanish as one gets closer to the satiation level. In contrast, less easily satiable innate needs tend to attract a growing expenditure share with rising income (income elasticity > 1). However, the additional consumption does not necessarily imply a welfare gain.

The need for social status recognition is an important case in point. Need or preference satisfaction is achieved here if the relative social status one aims at is recognized by relevant others. Hence, this is a positional preference (Hirsch 1978). The means by which one tries to obtain recognition is the attempt to signal one's desired status.

⁹ Incidentally, the three levels identified above at which the motivational forces work coincide with the three layers of cultural evolution center stage in Hayek's (1988) theory. The motivational hypotheses discussed here for the three levels therefore tie to Hayek's approach lacking such hypotheses.

This can be done by spending on consumption items properly conveying status. Yet, if income grows and everyone spends proportionately more, this does not change anyone's relative position. The need for social status recognition tends to be no less deprived than before, the motivation to spend accordingly unchanged. There is no change of preferences involved. The motivation to spend ever more results from the fact that status is not defined in absolute, but in relative terms. Would no one engage in spending more, everyone's positional preference would equally be satisfied. In other words, if the budget share of positional expenditure (conspicuous consumption) winds up with rising income, there is on average no welfare gain associated with this – a case of wasted resources (Frank 1999, 2011).

The need for sensory and cognitive arousal is another important example of an innate need that is difficult to satiate by spending additional resources on it. However, the reason is a different one. Deprivation can only be reduced here through experiencing sufficiently arousing stimuli for which there is thus a preference or motivational force. However, what is sensed as sufficiently arousing is subject to hedonic adaptation (Frederick and Loewenstein 1999). The adaptation effect depreciates the arousal value triggered by a repeated experience of the same stimulus. This amounts to a corresponding endogenous preference change. Deprivation thus returns as does the motivation to reduce it again. However, to reach the same level of preference satisfaction as before, more or stronger stimuli – usually requiring a larger expenditure share – are necessary.¹⁰ As a consequence, a growing income is likely to induce an unstable growth of corresponding expenditures as already envisioned by Scitovsky (1976). The increase in welfare, i.e. in the level of preference satisfaction, if there is any, does not correspond to the additional spending. Without additional spending, hedonic adaptation can, however, be experienced as triggering a welfare loss.

A preference change inducing a similar time asymmetry in the experience of welfare also occurs in the context of acquired wants and cognitively constructed motives (case (ii) and (iii) in Hypotheses 1 and 3). The reason is not hedonic adaptation, but a learning effect implied by non-cognitive learning of stimulus associations and cognitive learning about action-goal relationships. As stated by Hypothesis 5, the preference satisfaction opportunities perceived are getting more detailed and more specialized. Since by Hypotheses 2 and 4 both acquired wants and cognitively constructed motives are not subject to an intrinsic satiation process when resources are spent on them, it is likely that, with rising income, they also attract increasing expenditure shares. This conclusion is valid *a fortiori* as long as new wants are learnt or additional plausible cognitive motives are constructed.

The motivational adaptation processes due to hedonic adaptation, learning of stimulus associations, and cognitive learning undermine the standard assumption of time-consistent, unchanging preferences of canonical welfare economics. Preferences change from one date to a later one. The measuring rod for welfare at one date is no longer valid at a later date. From the point of view of the currently just prevailing state of preferences,

¹⁰ The history of the tourism and entertainment industry offers abundant examples. At the end of the 19th century, for instance, a leisure trip to Blackpool was considered a major source of arousal for an average British. Nowadays, such a trip may still trigger arousing stimuli, but to reach a comparable level of arousal at least a trip to the Balearic Islands can be assumed to be necessary, see Chai (2007) for a discussion.

additional resource spending may well imply a welfare gain in the discussed cases. However, this gain is invalidated if, as it is likely, the described motivational adaptations occur. In this part of the preferences, preference satisfaction becomes a *drift process*. With respect to the acquired wants and cognitively constructed motives it implies the insight: had the corresponding extended and more refined preferences never been learned, there would be no sense of missing anything when the available resources do not allow to serve them; once learning has taken place, however, foregoing the opportunities turns into a welfare sacrifice.

The drift process that preference satisfaction or welfare is subject to implies a certain preference relativism. In the case of the two discussed innate needs that are difficult, or not at all, to satiate and where an increasing resource spending may produce no welfare gain at all, economic growth cannot simply be equated with welfare improvements. The same now holds for acquired wants and cognitively constructed motives for which no lasting welfare improvements result. This does not amount to a direct waste of resources as in the case of races on status expenditures. But the diagnosed preference relativism raises doubts about the usefulness of spending resources on ever newly learned motivations. The equation “economic growth = better life” (in the sense of improved well being) seems to be undisputably valid only for the more easily satiable innate needs as long as they are still deprived, i.e. certainly as long as poverty, drudgery, and malady prevail. Once economic growth has made a level of income available at which spending on the more easily satiable needs can be brought close to the satiation level, the correlation between income and welfare start getting questionable.

Doubts about the usefulness of using scarce resources the way it has been described gain additional momentum once, in a broader normative context concerned with the moral legitimacy of human actions, the values of justice and fairness are also considered. From a welfare point of view alone, motivational drift and peculiar preference relativism may be problematic. But they do not imply an obvious waste of resources. The corresponding resource uses in the advanced economies may, however, be morally contestable once justice and fairness criteria are taken into consideration. With the prevailing global income distribution, a substantial share of the world population is exposed to significant levels of poverty, drudgery, and malady. Under these conditions it may be difficult to align with any notion of justice that an ever larger resource share is used in the rich countries for innate needs that are insatiable anyway and for wants and cognitive motives which have to be learned first before they allow welfare gains.

Furthermore, economic growth draws increasingly on natural resources and potentials in a way that is not sustainable. It thus takes a toll on the future possibilities of less developed economies and future generations to similarly benefit from nature as the present generation in the developed economies does. Again a question of fairness can be raised. Can the described resource uses in the rich countries be legitimized in terms of international and inter-generational justice considerations given their doubtful welfare effects and the way the effects accrue?

6. Conclusions

Preference subjectivism in canonical welfare economics suggests to treat the motivations underlying individual behavior as an unexplained “black box”. More recent behavioral approaches to welfare theory have so far followed the same device (with the exception of

risk, time, and social preferences). The neglect of motivational hypotheses, it has been argued, comes at a cost. Welfare economics is thus cut off from an important recent debate on whether and when the equation “economic growth = better life” holds. To assess this question and its relevance for welfare, it is necessary to understand what human motivations drive the economic growth process. The motivational hypotheses that have been discussed here point to a strong impact of both cognitive and non-cognitive learning processes on the emergence and change of individual preferences. This has been argued to imply a drift process in assessing welfare improvements and a certain preference relativism. Their normative relevance for assessing economic growth has been shown to be particularly momentous, if the value basis of normative judgments is extended beyond the welfare criterion to justice and fairness considerations.

The argumentation in this paper started with the claim that economic growth is an important facet of cultural evolution. If this is true, it can be asked what relevance learning processes in human motivation – examined here exemplarily for their role in economic growth – have more generally for assessing cultural evolution. Motivational drift and preference relativism may well turn out to be contingencies not only for what is currently assessed a welfare gain or improvement in well-being. They may be equally relevant as contingencies for what is currently considered desiderata that should be accomplished by cultural evolution. The question then remains whether the normative implications of such a finding would be equally momentous for assessing cultural evolution as they seem to be in the case of economic growth.

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