Towards sustainability: Modelling a democratic green economy based on evolved human behaviour by integrating social and natural sciences.

During the last three decades, serious efforts have been made to integrate social science and natural science, for example the concept of Sustainability Science (reviewed in Mooney, Duraiappah, & Larigauderie, 2012). Mooney et al. states a number of obstacles these integration efforts have faced and identified, like the concepts of altruism, free will, valuing of money etc. The science of human behavioural ecology covers aspects of evolved human cognition and behavior, including politics and economy, and may be in a position to address some of the central obstacles (more references in Bongard & Røskaft, 2010). Climate change is part of a problem that emerges from overexploitation and global economy, and must be treated as a symptom of human activities in general. By using human behavioural ecology as a catalyst, the network will be requested to perform analyses of, and subsequently come up with models for a democratic green economy and political solutions to a sustainable society.

Life must reproduce and replenish resources to meet our basic needs, i.e., food, shelter, air, water, fibre and soil (see http://www.teebweb.org/ , where the web of ecosystem services is presented, and http://www.planetunderpressure2012.net/, http://www.uncsd2012.org/). Conference after conference states this, but few dare to present concrete political solutions, especially when it comes to political sectors such as Fishery, Agriculture or Economy. Within the political sector Environment and EU Environment Directorate-General (DG-Env), there is an acknowledgement to these concerns and concrete political actions are undertaken (e.g. EU's 2020 biodiversity strategy). Although this is a positive development it is also acknowledged that with only one sector thriving alone, sustainable use of our planet's resources will be a lost case. Two factors are essential:

1. Dominating human strategies of wastefulness and squandering are a direct response to the sexual selection characterising humans (Buss, 2008). This cross-cultural observation, throughout all known history, include today's cultures (Diamond, 2005). Over-consumption, and the difficulties for each individual to be content, are driven by emotions and inclinations inherited from the most generous consumers among prehistoric man. The general human attractiveness of resources and power fit neatly into the Handicap principle, a biological model useful in understanding extravagant behaviour in all animal groups. The cognitive mechanisms in the human brain are now being physically mapped by MRI research (see earlier references). We introduce a definition: "*The emotions, inclinations and tendencies felt by an individual are evolved, inherited rewards or punishments that helped our ancestors to act in an evolutionarily fruitful way in the past*".

2. The other essential factor is that humanity's few successful ancestors actually lived and evolved in small societies, close to family, friends and the nearest environment. No prudence or concern for global issues was necessary to be a successful carrier of the human lineage. On the contrary, generosity and wastefulness paid off in the forms of popularity. Human cultures have, with few exceptions, predictably destroyed their living conditions (Diamond, 2005). Human history is rather a gloomy tale when it comes to taking care of its own living conditions. Through overconsumption and destruction of water and soil, most cultures have grown beyond ingroup size and collapsed. The common factors from the known cultures are overpopulation and overexploitation. Different branches of behaviour sciences, like behavioural ecology, game theory and evolutionary psychology, have shown that we change behaviour according to group size. We may easily act altruistic, cooperative and generous when being in an ingroup, closely observed by peers and aquaintances. Up to a few hundred individuals can, under right circumstances, be managed as friends by each individual. In

outgroups (i.e. larger societies), humans can more freely focus on own benefits without being observed, controlled and punished for egoism ("Tragedy of the unmanaged commons"; (Hardin, 1994). Global economy and current policy are working on outgroup behaviour strategies. Each investor act to his or her own benefit in a global market that lacks the judging scrutiny and eyes of close friends. Individual moralism alone is therefore predictably not a sustainable solution in large societies. Consequently, throughout history, outgroups are characterised by egocentric actions and suspicion and aggression towards outsiders. In a globalised world with dwindling resources, it is essential to analyse, understand, and propose ethical, solidaric and sustainable solutions based on scientific knowledge.

Project description: We intend to create a research network by inviting researchers from a wide range of sciences to combine their special expertise, using human behavioural ecology as a catalyst: Human behavioural ecology will include mating and gender research, evolutionary psychology, game theory and criminology. In addition the research network will be joined by cross-cultural evolutionary anthropologists, neuroeconomists (http://dibs.duke.edu/research/d-cides), and social scientists working with environmental issues, economy, policy and governance issues. From these dialogues, we will develop a model of a comprehensive democracy based on human behaviour. The model will end up in a policy for a stable democracy comprised of sustainable production based on resource economy, equality and solidarity.

There are several points that will be addressed during these dialogue sessions. For example:

1. Alienation. Western democracies and globalisation fail to give people a day to day feeling of responsibility and co-determination. The feeling of genuine participation and the possibility of making rational choices should be the foundation of a democracy. A sustainable future is more probable in a democracy that focuses on equality. Transparency controls nepotism, corruption and curb envy (Wilkinson & Pickett, 2010). The election periods should be shorter, and the representatives should be closer to each individual. Today, important decisions concerning the factors mentioned above are rarely taken by electees, but rather by large companies and their investment decisions, focusing on free market economy's need for profit. Elected politicians today are caught in the crossfire between the demands of profitability, environmental problems and resource depletions.
2. The problem of relative values, as the TEEB initiative addresses. Today's economy, capitalism, measure success in terms of the money symbol. Norway consequently now saves the future in the form of capital. Capital releases a feeling of value that is not related to the real values of resources, food, transport or energy. Future goods are produced by ecosystem services and concrete resources that must be present in the future. In case of shortage of vital resources, the value of capital, gold, art or any other symbol, will dwindle.
3. The goal of global business is not focused on sustainability, but short term profit. This is incompatible with long-term resource planning on a limited planet. Available today are a large number of sustainable production methods, recycling and reuse. However, most of them are not used, on the grounds of lack of profitability. Paradoxically, the unanimous solution to the financial crises, poverty and unemployment around the world is based on increased production and consumption.

Three preliminary subgoals for the research network are:

1. To synthesise a model within each research field that encompass human drivers. Each contributing model will analyse political and environmental problems of today, and how they are connected to human behaviour: Individual behaviour, cultural foundations, values, sustainable production and development, equality, resource planning etc. What can each field contribute to in answering why humanity doesn't act, according to the

increasing knowledge of the challenges in the near future? 2. Implementing case studies: Around the world, several successful experiments on worker-owned businesses are running: (http://holacracy.org/how-it-works . http://www.theeconomicsofhappiness.org/). These experiments will be analysed using the models from subgoal 1. An important part of this subgoal will be to compare our results to other social science approaches and theories. Ideas, weaknesses and strengths of the model will be incorporated in the final step and subgoal 3. in which the model from each research field will be merged and elaborated on. A proposal will be formed for a concrete democratic system, based on ingroup representative democracy (see (Bongard & Røskaft, 2010), page 299, attachment 2).

The research network will be urged to come up with a preliminary model for a sustainable, democratic economy and political system, founded on what is workable within the limits and strategies in human ingroup-outgroup behaviour. Different aspects and feasibility of both the model and the transformation will be addressed: Knowledge transfer to the public, legal issues of transferring ownership, how to solve special cases of representation etc. To our knowledge, this is the first time a comprehensive model of human behaviour will be included in a a sustainable political solution (Mooney et al., 2012).

Project implementation

A core group of four scientists will invite researchers within each expertise field with the purpose of developing an application for the forthcoming climate research programme. The core group will, in collaboration with the invited experts, discuss and formulate intentions, factors and subgoals by focusing on how each field can contribute to the analysis. The core group will meet on a one day workshop for discussions early in the process. The results from the pilot project will also be published in a scientific journal, describing the efforts, results, basis for collaboration, and the possibilities for new analyses and concrete solutions. A homepage as a a resource gateway is under construction and will soon be launched. We will also engage a media consultant to document and communicate results and efforts.

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