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‘Food is the first thing, but the morals must follow on’: An attempt to holistically frame the discourse for action in the conditions of climate change

Abstract:

The article aims to set up a general conceptual framework for explaining the combined natural and social conditions associated with global climate change. Starting from addressing the issues through the metaphor of ‘the tragedy of the commons’ it suggests that a pessimistic reading can be avoided in situations where different participants of the commons understand the universal rules constraining preferable governance strategies, and can choose to form mutual agreements to act cooperatively in furthering some of their individual interests. Principle-style explanations are introduced and suggested as a useful explanatory model in this case, based on the considerations from the history of science. Based on the effects of the human interaction with the global ecosystem and fellow humans in joint common governance on the equilibrium relationship (and human security) three broadly applicable constraining principles are tentatively proposed, opening up space for further tests of case-study applicability, both in terms of universal validity and conceptual accessibility to different commons-governance participants.

Introduction: warnings

“Climate change is a clear and present danger [...] We are faced with a choice: act with real urgency to move away from the fossil fuels and develop clean tools that will help us completely rebuild our economic system, or carry on squeezing out the last drops and hope for the best. [...] The fossil fuel energy intensive “scenario” could lead to six degrees of warming by the end of the century.”

John Sauven of Greenpeace UK, *The Guardian*, 1st September 2010

"It is almost a standard that is impossible to [causally] prove, yet there has been so many cases of contamination of [water supply] since the drilling [for shale gas...] I don't think any of the [drilling company CEOs] would want to bring their children and grandchildren to live here..."

Chesapeake area residents, in *Costing the Earth*, *BBC Radio 4*, broadcast on 9/9/10, http://www.bbc.co.uk/iplayer/console/b00tmtwh/Costing_the_Earth_Blackpool_the_New_Dallas

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“The science is unequivocal – human activities are influencing the climate system, contributing to increases in global average air and ocean temperatures, the widespread melting of snow and ice, and rising global average sea levels [...]. Well-known economists have shown that there are instrumental reasons to immediately minimize CO2 emissions [...] and these arguments are underscored by global assessments of the potential human impacts [...].”

O'Brien, K.; St. Clair, A. L.; Kristoffersen, B. Forthcoming. The Framing of Climate Change: Why it Matters. In *Climate Change, Ethics and Human Security*. Edited by K. O'Brien, A. L. St. Clair and B. Kristoffersen. Cambridge: Cambridge University Press

Framing: explanation for cooperation

The traditional scientific rationality paradigm expects to reduce eventual misalignment between modelling in knowledge and manipulation in practice to a ‘simple science’ paradigm as suggested by Strand (2002). Such a paradigm presupposes objectivist and mechanist-materialist metaphysics which can be fully delineated by a disinterested (cf. ‘the view from nowhere’, Nagel, 1986) scientific discourse. The latter contains nothing but matter and energy in mechanistic action governed by a natural law. And though a lot of the ‘threat’ of global environmental change can be given in just those terms, presently they cover an insufficient proportion of human concerns and fail to take human intentionality and value ascription into consideration. Though the latter may be seen as too human-specific, subjectivist or scientifically otiose, they are crucial factors in human action motivation.

The ‘simple science’ view adheres to reductionism, advocating the epistemological deconstruction of the seemingly complex problems along the lines of their objective metaphysical construction out of the understandable and computable structural dynamics of the primary elements (which may not even be phenomenally present at the level of problem recognition) (Strand, 2002). But when the problem faced starts leading into seemingly endless (or at least too demanding) reductionist deconstruction (including conceptually conflicting empirical equivalents) we may want to look into different ways of conceptualizing the issue in the first place. This constitutes a departure from the ‘simple’ strategy, but one that may allow for a framing of the problems in a way that provides epistemic ‘jumps’ over the unknown metaphysics. Heretical though this may seem from the modern science perspective of highly differentiated institutions and expertise that allowed some contemporary societies to achieve “an impressive level of organization and welfare” (Strand, 2002: 164), it might open some possible routes out of the deadlock of the incompatibility of the problem and the ‘simple’ worldview we are trained to bring to bear on it.

More formally, where there are living organisms included in the description of the behaviour of the system, a mechanistic ‘physical paradigm’ alone provides an insufficient framework (Hauhs and Lange, 2008: 236) to predict or explain the actual experience. What is required is a discourse that is able to respect behaviour, thus not relying on the system states and component causal dynamics, but rather on behaviour and interaction. In such situations, the overall ‘behaviour’ (a process or trend in time that includes intentionality) becomes a primary category of description shifting focus away from the ‘system’, ‘components’ and causal laws regulating the ‘structures’.

Global environmental change is more than an issue of augmenting/fixing a deficiency in a single component of the individual-society-biological and physical environment-technology

system, so as to restore the previous (and supposedly stable) structure of the components. It encompasses all countries (demanding world-wide communication and understanding), affecting all sectors of society whose governance is traditionally separated, and concerns every aspect of individual humans' lives (as parents, professionally, citizens, habitants and consumers) (Rommetveit, Funtowicz and Strand, 2010: 147). Rommetveit, Funtowicz and Strand see the issue of reductionist mechanistic presentation of relevant knowledge as the foundation of the broader problems, the failing efforts to change societies towards more sustainable interaction with their material environment, and engaging of individuals into common action towards such a goal (Strand re. p. 151).

As every individual, and consequently societies as their aggregates, experiences and influences (however infinitesimally) the state of this whole system, the institutional basis of their self-perception, including language and culture, must be taken into account when addressing this issue. Yet the above system components paradigm, focusing on the technocratic interventions as the solution to the imbalance in the structure, fails to acknowledge the institutional basis through which environmental problems are experienced. Though more recent (cf. O'Brien, St. Clair and Kristoffersen, forthcoming, p. 9) integrated paradigms aim to overcome perceived inadequacies of the proposed structure behind the individuals' and societies' experience and self-perception, they still retain the image of society, resource economics and ecology as separate but interacting systems, thus "[blinding] us to the need for a new vocabulary to describe the world we inhabit" (Castree, 2005: 224).

Economic and technological aspects of these models, seen as underpinning the wellbeing of the individual-society components in the above initial paradigm, are closely related to the view that control and instrumentalization of the environment are the signs of historical progress and increase in qualities of life. Even the rational natural science knowledge that underlies the dominant framing of the global environmental change discourse, and has raised the issue that changes facing the individuals and societies today are anything but trivial, refrains from explaining to wider audiences what such changes mean for their wellbeing (for human security, for stable balanced relationship between humans and non-human surroundings), and how individuals can best in the long term respond to threats to their environmental, social and human rights.

From a theoretical perspective, a presupposed rational precursor to an involved, dynamic and evolving-in-time practical/active perspective framing of an issue is a way to situate the existing knowledge and to interpret and question the processes of formation of new knowledge to be fed back into the loop (cf. O'Brien, St. Clair and Kristoffersen, forthcoming). But more importantly, in the situations of a theoretical stalemate, of a reflexive period in which to meditate on or, crucially, debate within the group of actors the appropriate theoretical foundations for the future courses of action, stressing how a particular issue is framed, can expose the underlying premises and hidden assumptions incorporated in all knowledge production (as a precursor of competent action). When a certain group, such as expert bodies involved in the governance processes, is especially tasked with knowledge production for all, framing can expose this production as part of continuous social relations and reveal how power relations affect the dominant expert views.

Consequently, the framing of an issue can affect (or even provide) concrete suggestions for action of recognizable parties concerned. In terms of analyses from various contexts cited in O'Brien, St. Clair and Kristofferson (forthcoming) expert theoretical knowledge on global

environmental change coproduces both knowledge and politics, i.e. it has an effect on multiple and interacting scales of governance, on actions taken on poverty, vulnerability and insecurity reduction by contributing to the creation standpoints and rules concerning global environmental decision making.

Global environmental change is in the standard mechanistic-component framing considered to be a serious environmental problem, suggesting a complex interlay of physical, chemical and biotic factors that affect an organism or ecological community (eventually including the physical, chemical and biotic aspects of human societies) now exhibiting such a state that alters its overall form and threatens survival. Though undoubtedly providing crucial information concerning the material undertone of the said change, as documented in the atmosphere, oceans, ice, land, water, vegetation and species of all types as its aspects, this type of framing does little to explain what these changes mean for the equilibrium conditions between any society and its material surroundings, as well as within the societies themselves. As O'Brien, St. Clair and Kristoffersen put it "environmental discourse in many ways excludes much more than it explains when it comes to understanding the human dimensions of [global environmental] change" (O'Brien, St. Clair and Kristoffersen, forthcoming, p. 10). They show in analytical detail how such discourse hides the important questions related to equity, ethics and reflexivity, all of them aspects of experiencing the relation between human individuals, within societies and between societies and their non-human immediate surrounding.

From the perspective of commons governance and the balanced (equilibrated) exchange between any societal unit and its surroundings (both to be developed below) global environmental change becomes more than an issue that can be managed through individual behavioural changes, sectoral interventions and new regulation, not just a problem to be solved by existing governance institutions through modernization, stewardship modification or the mantra of 'sustainable development'. Societies as commons utilizers and governance participants need a thorough investigation of the wellbeing and security they expect or hope to achieve through the relationship with their environment and at what timescales (establishment of equilibrium through time).

The need to act cooperatively

The future development of global environmental change today can be viewed as an issue of managing global (or at least large scale regional) environmental resources (the commons) as they circulate through nutrient cycles. But, as Ostrom (1990; cf. also Barrett, 2003) warns the issue of how to best govern the exploitation of common resources, used by many individuals for diverse purposes, is both politically and academically still disputed. The problem, known of since antiquity, is that human individuals, guided by pursuit of their particular interests, sometimes act so as to jointly produce a degradation of the material resource available to all. In M. Olson's (1971) terms, individually rational behaviour produces collectively irrational outcomes. Hardin (1968) formally conceptually introduces the well-known hypothetical situation, the 'tragedy of the commons' in which it is, in terms of rational generation of instantaneous profit, more beneficial for each of the herders on a joint pasture to increase the number of animals beyond the carrying capacity of the pasture. That way the immediate profit of the individual herders is increased presently whilst the degradation of the common

pasture resource is shared as a cost by all participants, and is often transferred to the generations that have not yet participated in its utilisation.

That is the consequence of identifying the individuals' interests exclusively with immediate material gain. As Ostrom (1990: 3) points out, "much of the world is dependent on resources that are subject to the possibility of a tragedy of the commons" whereas in the tendency to achieving long-term balance the resources should be utilised so as to meet the needs of the present without compromising the ability of the future generations to meet their own needs (WCED, 1987). It is unclear, though, what governance structures in human societies are best equipped to maintain this kind of equilibrium tendency. History teaches us that institutions other than the state and the market have in many cases been exemplary long-term managers of the shared resource (cf. Ostrom, 1990; Rappaport, 1971). Yet, negative precursors abound as well, and for some time in Western thought¹ commons governance was seen from a predominantly pessimistic vantage point: 'the tragedy of the commons'.

What Ostrom's (1990) overview of the situation indicates is that though there is a rational explanation for an unsustainable commons governance by individuals and societies, selfish activities leading to degradation may not necessarily be their default choice of action, provided they can communicate, form binding agreements and have access to sufficient information about actions of others and predicted consequences of their combined interaction with the resource (cf. also Axelrod, 2006). In light of the regulation and motivation notes sketched below, it is not impossible to see both individual humans and entire social groups, societies, in ways that do not follow the rational steps leading to maximisation of their immediate benefit.

Such an outcome of Ostrom's commons lesson is the broadest view of the framing developed in this text. The aim is to frame the issue of global environmental change in the discourse that allows extremely diverse societies to agree on common points, to communicate about joint and individual interactions with the common resource and to have access to a clear and immediate understanding of the actions of others and the predicted consequences. It aims to pay more heed to the otherwise respected democratic commons governance where decision outcomes are "legitimate to the extent they receive reflective assent through participation in authentic deliberation by all those subject to the decision in question" (Dryzek, 2001: 651, as quoted in Rommetveit, Funtowicz and Strand, 2010).

The proposed framing should allow the participants to understand the constraining rules of the game enacted at the level of the whole none of them can hope to control, and so as to avoid the remorseless tragedy outcomes. But it is important to stress that this is not to provide a ready-made solution pattern for every particular problem and satisfactory to every

¹ At the rise of the modern Western worldview and technological development J. Locke's friend, a member of the contemporary social elite, Lord Shaftesbury reasoned that 'every Creature has a private Good and Interest of his own; which Nature has compel'd him to seek, by all the Advantages afforded him, within the compass of his Make' (as quoted in Robinson, 1998). And though there may be more charitable readings of the stated dictum, and we shall strive to delineate at least one of them, the 'tragedy of the commons' was a viable concept both at Shaftesbury's time and well before (Ostrom, 1990).

single individual, but to provide a foundation for each interested party to extract the relevant information for decision making with transparent reference to their own rationality. The cooperation generalizations rest on the underlying (technical?) notions of simple overall behaviour of the otherwise seemingly chaotic and complex entity, such as a global human society undoubtedly is. The primary aim of this text is to provide the basic framing for explanation, explanation that can then be variously micro-shaped to suit different audiences, but one that at every instance easily retorts to the basic principles outlined below, and upon which they can then develop motivation to act or consent to a wider action pattern.

The challenge is to respect the proposed principles, or some publicly accepted alternative, as binding constraints on the possible actions, so as to avoid motivation patterns that lead to the overall 'tragedy of the commons'. This is taken to be a specific position of the framing that involves human societies, us here and now, and dynamically responsive, not just passively quantitatively depleted natural systems, traditionally framed as a passive object of outside observation and manipulation.

Motivation to act cooperatively

It is indubitable that human individuals are motivated to act by both physical/biological needs and personal goals, where the latter are often influenced by society at large. Where the basic physical needs can be met to a satisfactory level, the problem of global environmental change for most of the human population today still falls under the second category, action spurred by the socially influenced tasks and rewards. It is of course, not impossible that even in this sphere the basic spring to action is 'hedonism' (closely related to immediate material gain), drive for maximization of pleasures and minimization of pains (akin to Rational Action Theory in social sciences). And though much can be said and done also on this front (cf. Steg and Vlek, 2009), there are practical and philosophical arguments against applying a blind 'social engineering' approach, through centralised control of pleasures and pains, to the issue at stake.

Even in legal philosophy and theory there are considerations against achieving social goals through insubvertible blind regulation, such as technological solutions bring. For example, R. Brownsword (2005) writes about the essence of human dignity preserved through normative, but not technological regulation such as cooperative agreements between equal parties. This dignity, important in many respects to the global environmental change management, is preserved through accountability for ones own actions and the choice to act in accordance with or violation of rules, even when rule-breaking is detrimental at both the social and individual level. Accountability on the other hand is diminished through the invisible hand of technological regulation such that deprives the regulatees of making conscious choices about whether to act in a particular way. And even though such an invisible hand is extremely efficient in securing some legitimate interests (in this case perhaps preserving something akin to the present state of the biosphere of the entire planet), the price paid for it is the communal loss of the essence of human dignity and respectful self-perception.

More importantly, on the issue of global governance, where whole societies and cultures become participants in commons governance, in cooperation or conflict for resources, such externally driven (carrot and stick) action becomes much harder to conceptualize and apply. Fortunately, there are views, which we cannot elaborate in great detail here, upon which knowing and understanding the situation, including the generation and constraints of the problem/task, are important in promoting one type of action rather than another. What is more, such views (generally clustered around 'attribution theory of motivation' (Heider, 1958; Graham and Weiner, 1996: 73) are much less prescriptively framed, comprised of interrelated constructs but avoiding strict mathematical formulation (a formula of motivation pumping). As such it seems more fit for our ontologically loose base of 'black box' (see below) societies and societal sectors with different histories and cultures. It also stresses the importance of explanatory framing of an issue in connecting the presentation of the problem to its possible solutions from the perspective of the explainee-actor. Framing plays a role in the motivation for idiosyncratic action, i.e. the one that is not based solely on reward and punishment enacted through their influence on physical/biological needs (effectively, though pleasure and pain).

The view tentatively nudged at, the so called 'attribution theory', sees human actors engaged in trying to understand the causal structure of their immediate world so as to reach causal decisions which in turn influence expectancy and affect. It stresses the importance of cognitive, but also emotional, determinants of action. 'Emotional' here does not necessarily signify subconscious or irrational, but merely an otherwise unexpected part of our overall conscious cognitive rationality, a human characteristic especially important when individuals operate as parts of larger social and political groups. To be motivated to act towards desirable behavioural change, according to 'attribution theory', the actor has to be able to see the potential for change as internal, as coming from themselves; to see it as stable over time, not varying haphazardly; and finally to see it as subject to volitional alteration, thus excluding negative fatalism. It remains a matter for a much wider debate to establish in what ways these conditions can be satisfied by societies cooperating on alleviating dangerous global environmental change. It is hoped that the three explanatory principles proposed below (tendency to equilibrium, fair distribution of burdens, and guaranteed minimum) can provide an initial step towards framing the problem such that idiosyncratic motivation for change is engendered within different societies and their participants.

Universal fairness and universal understanding

H. Shue (1999) charts how the concept of fairness (which in his words is just a common-sense version of the technical notion of equity) outstretches any specific culture (however historically dominant) and has a universal application. This is not to say that he denies that specific enactments of fairness can differ in some respects between societies, but is to deny that any cultures or societies lack a concept of fairness in the first place. And should the concept be shared, Shue argues it has common elements across all societies, a core that can be agreed upon by different individuals and societies. People everywhere, he says,

understand the question of fairness of some arrangement for all the parties involved. They can point to unfair biases within such arrangements.

Again, for the purposes of proposing a framing here, it is not clear that all issues of fairness can be quickly and lastingly settled, but merely that all parties concerned can understand them being raised in the first place. Universally, across societies and cultures, it makes sense to ask whether an arrangement of investing resources towards a common endeavour between the young and old, between male and female, between educated and those without education, between those who already worked long and hard and those who did not, between those who invest material capital and those who invest labour, is fair or biased towards one side or another. "All people understand the question, even where they have been taught not to ask it", says Shue (1999: 532).

Immediately it is worth adding a few warnings, in line with Shue's broader argument as well. Fairness need not, and often is not, to be equated with efficiency and profitability. Both might have advantages in their own right, but fare less well than fairness as the principle framing of the explanatory situation concerning the commons governance. And though, for example efficiency, might be beneficial to restoring equilibrium, it is not always a good motivator for all participants in the commons arrangement. Though often rationally justified, efficiency is seldom fair and fairness, respect for dignity, is a better motivator for individuals and societies. On the other hand, fairness should not be equated with complete egalitarianism, for issues of historic imbalances, but also motivation. Just like the issue of equilibrium, fairness too does not require an immediate and all pervading equivalence in every respect of all concerned.

Our values and aims can differ to the extent that the overall endeavour we cooperate towards is not jeopardised. But, most importantly, as Shue insists, a fair distribution of benefits and burdens must include causally relevant historical facts into consideration and not start from a completely egalitarian position. In terms of the global environmental change this is the well known situation that it is expected that those with greatest historic benefits bear greater future sacrifices. On the other hand, Shue demands egalitarianism over dignity and respect, and for present purposes it is the precondition of willing complete cooperation by all commons governance participants. Those abstract things should be equally distributed among all participants, and this is one of the historical factors (Ostrom, 1990) which lead to avoidance of the tragic outcome of commons governance. To willingly enter into binding agreements, receive and understand all relevant information, the participants must enjoy equal dignity and mutual respect. Without further elaboration here, it can be stated that equilibrium conditions are fostered by an egalitarian distribution of dignity and respect between individuals, societies and cultures.

Of course, even the desired outcomes can be reached through any number of alternative, yet ontologically and in terms of discourse employed very different, explanations. History of science indicates that in such situations where competing mechanical-reductionist explanations have long proven to be empirically equivalent (thus covering the same

observable phenomena and leading to the same macroscopic predictions), ontologically (and in terms of how they fit with the rest of the overall world-view) conflicting principle style explanations have provided a breakthrough step. Only this time, a principle explanation that combines the worldviews of physical science, economics and human development is sought. Thus history of science is only an inspiration here, not a role model, as we are dealing with an issue that surpasses the straightforward scientific explanation-creation.

The best way to illustrate what a principle explanation is is to contrast it to the most common type of explanations we come across in sciences. Most theories in natural sciences (especially 'fundamental' material sciences) are constructive theories, theories that go hand-in-hand with reductive explanations of experience in terms of causally deterministic interactions between structural components. In Einstein's words (he utilised the distinction with reference to his own work), constructive theories attempt to "build up a picture of the more complex phenomena out of the materials of a relatively simple formal scheme from which they start out" (Einstein, 1954: 228).

Principle theories, on the other hand, do not synthesise complexes out of the foundational simples but aim to determine universal principles out of which to analytically derive the specificities of experience. Both are subject to equally damaging disparagement and this presentation is but an introductory sketch of a wider investigation in philosophy of science. Constructive theories can be ridiculed for reducing phenomena to myriad of basic (unavailable to direct experience) entities specifically suited to produce just that phenomena, and principle theories for deriving just about anything from the overarching principle 'Anything goes'.

Disregarding such extremes, practically implemented principle theories start with the general characteristics of the observed phenomena, formulated as constrictions which any future phenomena of that kind have to satisfy. The example Einstein uses here is thermodynamics which seeks to explain the behaviour of macroscopically observable objects, the everyday bodies in space and time, without speculating about their constituent elements, but by simply constraining that behaviour by the universal principles derived from the experienced fact that perpetual motion, lossless cross-transformation of heat and work is impossible.

The explicit advantage of framing the global environmental change issue in terms of the principle-style rather than constructive-style explanation, following Sklar (1990), is that the former are more cautious in ontological speculation whilst unifying a greater range of phenomena under one explanation. For example, in thermodynamics (Einstein's own paradigm principle-style explanation of the material phenomena) we can describe the occurrence of properties of a wide range of objects (the epistemological 'black boxes') without any concern as to how structurally those properties come to hold of those objects. It is possible to understand the cooling and heating of objects as different as the planets and pressurised deodorant containers from any toiletries kit by simply subscribing them under the same constraints. No investigation or speculation as to the detailed structure and, more

importantly, structural dynamics of those different objects is required. One can say that it is simply possible to choose what to single out as the 'black box' object and recognise common constraints on its behaviour. Such a deliberately ontologically coarse approach follows Sterrett's (1998) summation of Einstein's 1905 revolution in the history of modern science claiming that he saw that the solution to the problems, which others had tried their hand at unsuccessfully using more mechanistic means, lied in the selection of universal formal principles from the domain of immediate experience.

Such a 'black box' approach to objects of explanation has obvious parallels to our complex 'Earth system', where phenomena have to be understood whilst the details of structures that make them up (materially, causally and sensibly) are simply beyond the reach of mechanistic model construction today. Duwell (2008), writing about a case from contemporary physics, points out that these are not metaphysical black boxes, objects that we cannot now, but might be able to one day, take apart and come to know better. It is not simply the case that more research, a more detailed delineation and greater education of the population is what is needed. They are 'epistemological' black boxes, meaning we can observe and take them apart, but that due to the guiding principle we have adopted we need not speculate about their ultimate nature. This is the ultimate advantage of the principle style explanations for the purposes of the wide reaching framing of the global environmental change: debates about the detailed structure can be avoided, contemporary unknowns can be leapt over. Sure, this can lead to superficial treatment of the problem, and it is not the purpose of the proposed principle-style explanation framing to stop every attempt at deeper causal-mechanical understanding of ourselves and the world we inhabit. But some present day stalemates, especially concerning the immediate steps in the global commons governance can be averted, working towards avoiding the 'tragedy' outcome.

Re-balancing, guaranteeing minimum and re-distributing burdens: the explanatory foundational concepts and principles

As H. R. Brown and J. Uffink (2001) show, even behind such a formally well delineated structure as thermodynamics (a principle-based explanatory narrative), there lies a guiding concept with the seed of much of the meaning and idiosyncrasies of the formal explanatory apparatus. Equilibrium, a balance, is a notion that can be applied to many aspects of human experience beyond thermodynamics, including the resource/nutrient cycling of the global population and the planet as a whole. In it lies concealed the behavioural principle, the 'minus first'² law of thermodynamics that isolated bodies in an arbitrary initial state within some fixed volume of space will spontaneously attain a unique state of equilibrium. It is the foundational postulate of this framing that left to themselves all things, the 'black boxes' as far as we are concerned, tend to equilibrium with their surroundings.

² For historical reasons the '0th law' name had already been taken, as a further precondition of the 3 standard principles of thermodynamics.

Thus, biological population with time equilibrates/balances its resource uptake and release with its environment, social groups over time equilibrate in material and cultural exchange with surrounding societies etc. The importance of this seemingly placid and obvious point is that it charts the direction of temporal development of an object of explanation from when the equilibrium condition is suddenly removed/disturbed to when it is restored again. An important physical characteristic of the equilibrium state at macroscopic scale (of epistemological 'black boxes') is stability, an endurance of the overall state in time. Stability is also a shared aspect with the 'human security' concept and its accompanying wider discourse (Gasper, 2005: Asun intro. p.3).

This is a discourse that also invokes normative claims (such as some of our principles may be) about how the content of individuals' lives, including a reasonable degree of stability, is what matters from different institutional and cultural perspectives (Gasper, 2005). Much closer to the governance and political discourse than the abstract notion of equilibrium, 'human security' is an appropriately inherently relational concept that draws attention to the vulnerability to sudden imbalances resulting from numerous physical and social conditions and their historical legacies. As O'Brien, St. Clair and Kristofferson state, human security is an integrative concept, a sort of 'black box' perspective on the complex connections between global environmental change and a myriad of social processes (globalization, poverty, urbanization, food insecurity, epidemics) that are standardly excluded from the scientific discourse on global environmental change. Human security can thus be used as a connector between the abstract notion of equilibrium and balance to the application of explanatory framing regarding specific instances of various commons governances.

Of course, equilibrium in terms of what, and whose equilibrium are issues that deserve further exploration, but are an issue of a larger ontological discussion. Suffice to say, from a commons governance perspective not all possible final equilibrium states are equally desirable. The remainder of the exposition of the principles moves away from the equilibrium discourse to avoid abstraction, though occasional mention of the connection between the original search for balance in resource consumption, ethics and social relations and the precise formulation of the supposedly universally recognisable principles will indicate the connection to the equilibrium concept.

Thus, in less abstract terms, there is no escaping the fact that human population growth, material wealth increase through pre-set utilisations of technology and urbanization drive the use of natural resources and environmental services upward worldwide. Most humans want a piece of that goodness at a great cost to fellow humans and future generations. Even if they do not, such practices are deeply rooted in the economic structures and cultural patterns that motivate individual and group behaviour. Unlike 500 years ago that is no longer insignificant to the planetary biosphere as a whole. They lead to relatively sharp environmental change (as they are a relatively sharp change in human populations' characteristics and lifestyle) which is resisted by incremental readjustment of the environmental conditions in turn leading to societal conflicts and challenges at local,

national and international levels. Accompanying unfair distribution of the costs and benefits of environmental change prompts serious concern for equity and fairness at all levels of governance. In the commons-like situations where such governance includes the decision-making participation of all concerned, the following principles can summarise the strategy constraints.

The current sustenance processes (energy, food, and commodities production) of the global human population drive a historically sudden imbalance of the material conditions on the planet. This leads to change in parameters (e.g. average global surface temperature, acidity of the oceans, sea level etc.) over a 40 year period removed from several million years of equilibrium or steady flux towards. From the perspective of history of human societies a relatively sudden significant disturbance of balanced conditions is introduced.

In absence of images and graphs it suffices to say current levels of CO₂ in the atmosphere are about 385ppm whilst only 100 years ago and for a long time preceding that they were only about 280ppm. Meanwhile, so far all efforts to curb CO₂ emissions to the atmosphere through regulation and international agreements have not worked. In other words, the equilibrium on the planet is disturbed by the current practices of use of resources and environmental services by the global human population. Of course this is an oversimplification for some and a gross scaremongering for others. But neither will be debated with here.

What is at stake is how to frame the findings and presentations most readily found in the IPCC and UN Development publications, the ones Speth (2008) calls 'our collision with the planet'. Those mostly show records and predictions of change over a 40-100 year period not registered for millions (or in some cases tens of millions) of years. If the change over those millions is seen as the steady flux towards or minute oscillation around the equilibrium state, then the rapid change recorded and predicted now is nothing but a sudden equilibrium removal. And in such cases the overall tendency of the system is to re-calibrate the overall equilibrium with the surroundings and within the sub-components, but from a perspective of one of the relata this need by no means be return to the exactly identical initial state.

The main goal here is to warn of the predicted tendency of the global humans + non-human environment compendium to return to a state of balance of physical parameters and their biotic components. Looking at the global situation (which often may be hard to do from local perspectives) and talking coarsely: a state of sudden imbalance has occurred and the overall global system will tend to find a new state of balance. The principle itself does not proscribe what ought to be done in terms of commons governance, it does not even state what shape the return to balance will or ought to generally take. That is a matter for more specific climatological, environmentalist, geographic and economic discourses, a matter for debates between the strict scientific monitoring of the environmental conditions and the social and economic activities of human societies.

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But acceptance of the general overall state of imbalance and the understanding of the natural tendency following occurrence of such states is the sufficient first step in motivating the commons stakeholders to act transformatively in relation to current practices. This will eventually probably have to include different governance structures, different energy production, different economic models, different cultural practices, different self-perception by individuals and societies etc. but in terms of framing a lot is achieved when this initial point is universally accepted and translated into various subject-specific discourses.

The remaining two principles (fairness and guaranteed minimum) are more closely associated with values than facts, and focus on the constraints to possible modifications of the status quo in tendency to the new equilibrium state. Moreover they are more plainly expressed following closely the foundational ethical principles of global fairness, a concept preceding mutual respect and dignity. They too, however, have a close connection with the equilibrium tendency and can as such prove to be good guidance to the commons stakeholders. Shue (1999) claims that his principles, two of which will be adapted for our purposes here, do not depend on controversial philosophical theories of justice and are thus widely applicable and easy to understand. Behind them lies an awareness of the danger of further destabilizing the conditions all societies share on the planet should the current path to development and economic prosperity be pursued, similar to the sharp equilibrium removal suggested above.

But he points out that despite unequal inter-relations in the past, all societies are now aware, especially those on the profiting end of inequality, that 'business-as-usual' when applied to all leads to "everyone [continuing to suffer the effects of environmental destruction]" (Shue, 1999: 531), a 'tragedy of the commons'. He thus envisages that under such circumstances all societies might be willing to act cooperatively on equitable terms and in a manner that gives weight to the universal notions of fairness of burden distribution. From our perspective issues of fairness and equality become ones of choosing which inequalities in other human goods ought to be increased or reduced in order to redress the overall equilibrium conditions of interplay among global societies. The further general explanatory principles are justified by the tendency towards restoring rather than further disturbing the equilibrium through preventing the existing social inequalities from becoming worse by infliction of an unfair additional disadvantage to those who are already relatively the worst off.

Assuming that the recent interaction activities have contributed to or solely created the imbalance, a sharp deviation from equilibrium, a reduction in the overall human security, the following explanatory principles aim to prevent additional unfair disadvantages to collaborators from whom cooperation is expected. If the global humans + non-human environment system is to press for return to equilibrium of its own accord, its human subsystem should try to align with that tendency, rather than work against it and consequently invoke an even sharper response from the remaining segment.

It is unfair (and works against restoration of balance within the societies) when some groups have less than enough for a decent human life whilst others have far more than enough, and the total resources available are so great that everyone could have at least enough. (following Shue, 1999: 541)

We can begin to justify this from a simple observation about the motivation theories above, physical/biological needs have to be satisfied for other motivating factors, especially elaborate cognitive and affective ones such as mastery of causality behind success and failure in problem solving, to take central role. In simplistic terms, the hungry participants have to be fed before the joint work on a common task can commence. But away from such extremes, it becomes more difficult to see how this principle is to be enacted, and most particularly where the guaranteed minimum of decent life should lie. Quantitatively setting up such a minimum will determine to a great extent the potential for acceptable equilibrium restoration, but for explanatory framing it is important that this aspect of motivation for cooperative collaboration, a constraining principle on respectful collaboration, is recognised and affirmed by all. This principle also recognises the crucial explanatory role of recognition of 'radical inequality' prevalent among and within societies today: where the aggregate total of resources available today is sufficient for all parties to have more than enough, whilst some have much more than enough and other less than enough.

Of course, one might ask what of the different cultural heritages' influence on the definition of the minimum. What if the definitions are so widely different that the two parties will never be able to agree? From the position of commons governance this issue is easily informed by the above principle: whatever one party sets as enough must not exert a pressure on the commons resource that limits the access to minimum for others and leads to unsustainable management (denying this minimum in the future). No agreement would be fair, and would thus only bring about further imbalance, if it forced someone to make sacrifices that would leave them without necessities.³

But recent history shows the willingness of societies and transnational governance institutions to engage in notional attempts to restore different power and freedom balance within non-cooperative sovereign states, so opening up a debate about others' self-defined minimum should not be a moral or a political first. Simply, those that say they need much more, knowing that by doing so they bring damage to everyone, whilst others have much less, must think hard about how to convince others of the fairness of their position. Without fairness there will hardly be lasting cooperation, or in Shue's terms: "if the wealthy have no general obligation to help the poor, the poor certainly have no general obligation to help the wealthy" (Shue, 1999: 543).

³ Yet, so the objection continues, someone's luxuries are others' necessities. Though this will take further debate between the parties to resolve cooperatively, it is clear from the overall perspective, that necessities can be relativised within the whole with respect to the principles of balance and minimally fair distribution. If my necessities, however dear to me, quantitatively exceed those of the partners and deplete the common resource pool beyond sustainable regeneration bringing about a rapid imbalance of resources and waste, I must engage in some reflection about needs and wants.

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The final principle in this framing format, Shue presents as the 'requirement of simple fairness':

It is fair (and is in line with return to balance/equilibrium/stability) that among the number of societies contributing to a common endeavour those who have the most resources relevant to the endeavour should normally contribute most to the endeavour. (following Shue, 1997: 537)

Or, in terms of individuals, when a number of parties contribute to a common endeavour then those individuals with most resources should contribute most. Of course, attribution of different resources may vary between those individuals, some may have most time, others most money, and others still most physical power, but according to the principle of simple fairness those with most of anything should give most of the amount of it required for the endeavour. The strongest should pull hardest, those with most time should keep guard most and those with most money pay the highest bills. No resource commitment should impoverish anyone, or bring them below the minimum unless it does so for all.

This is usually taken as such a fundamental principle that it requires no derivation from more fundamental considerations. In terms of framing offered here it seems hardest to reconcile fair and unequal distribution of burdens with the equilibrium tendency of blind physical systems. Except that again in tendency towards a future equilibrium state, those substructures with most energy will give most to the establishment of the overall equilibrium. Most of the equilibrium heat capacity of the combined bathtub and cup of water will come from the bathtub, whilst relatively most 'heat' will be given up by the hotter of the two, whichever it is. In physics, though this should not be a blind guide to social governance but merely a possible conceptual inspiration, quantification of heat is only meaningful in relative terms, as heat available in difference from equilibrium (when no heat can be exchanged any more). In terms of societies, those with more pay more till balance is re-established. The one with more of a resource for the endeavour at the start will invest more for its successful outcome.

But what about motivation, why should anyone with more enter into such seemingly loss-generating arrangement? Avoidance of the imminent commons tragedy may be such a motivator, but it verges on compulsion rather than voluntary cooperation. Shue (1999) acknowledges the need for some incentives (beyond intrinsic altruism, no longer really inherent in the cultures in which we do not expect the all-seeing deity to reward investment it generally approves of) in endeavours requiring investments, but denies that those incentives have to be unconstrained by other considerations.

He says that though the exact incentive is open to question, it is mistaken to blindly assume that nothing less than the maximum conceivable incentive is ever enough. Rationally acting so as to avoid the tragedy of the commons, though not an inspirational incentive on its own, can combine with others in motivation for behaviour that does not bring primarily immediate material benefit. And in those few cases where no such motivation could be found, where only immediate gratification is what can be interpreted as any kind of

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acceptable outcome for the participants, the principle can be weakened to one of more egalitarian contribution should all participants so agree (thus a provision of "normally", following Shue, 1999).

Conclusion: easy as 1 – 2 – 3

In conclusion, environmental change and related governance can (and must) be framed so as to include social dimensions not as a separate component but an integral aspect of what the concept of global environmental change means for individuals, societies and governance structures. Some such framing will then eventually be acceptable to both those most disadvantaged by the said 'social dimension' and those cooperatively participating in the governance processes addressing the issue of global environmental change. Its methodological and disciplinary underpinning will span the wealth of rational factual knowledge gathered codified in science (and manifested in technology) and the value systems enshrined in human cultures and societies. A tentative proposal outlined here makes initial steps towards culture- and wealth-neutral conceptual combination of notions of cooperative management of common goods, sudden sharp imbalance (a condition of sudden instability) in the 'historically standard' functioning of the matter-life-humanity planetary system, and fair-play in cooperation of unequals. The aim is to explain to the unequal cooperants, so as to motivate them to act, the fundamental characteristics of their situation and its consequences, through general material and social/moral constraints on their future possibilities.

The tendency of natural systems to recalibrate to new states of equilibrium (undergoing change: losing something and keeping something preserved), guaranteeing at least a decent human life to all those who participate in cooperation, and unequally but fairly distributing the burdens of the task between the most and least able, are proposed as the limiting constraints of the proposed explanatory framing. The precise prescriptions for governance are at this level left unchartered, with expectation that whatever they are they will not generally violate the said constraints. Social and economic dimensions of both change and governance do not diverge within such a framing of the global environmental change as a problem, both have to exhibit strategies in line with restoring the 'Earth system' balance and fair play among mutually respectful but not otherwise equal cooperants. In other words, overexploiting the common good on behalf of any party, unfair distribution of benefits and burdens cannot be a motivator to the global population as a whole to work towards restoring the balance of resource exchange such that it includes the perseverance of most of today's societies. So, who's in for the game?

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