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The Changing Human-Nature Relationship (HNR) in the Context of GEC*

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Zusammenfassung

DIE VERÄNDERNDE MENSCH-NATUR-BEZIEHUNG IM RAHMEN GLOBALER UMWELTVERÄNDERUNG (GEC)

Der Artikel ist ein eingeladener Beitrag, der für die geplante fünfbändige *Encyclopedia of Global Environmental Change* verfasst wurde. Er dient als umgreifende Einleitung zu *Band 5: Social and Economic Dimensions of Global Environmental Change (GEC)*.

Das Ziel des Einführungs-Essay ist es, eine breite Sicht der sozialen und kulturellen Aspekte globaler Umweltveränderung (GEC) zu vermitteln. Er steht für eine westlich-sozialwissenschaftliche Perspektive und ist aktuellen Diskursen an der Schwelle zum 3. Jahrtausend u. Z. verpflichtet. Der Beitrag wird eröffnet mit einigen Bemerkungen zum Verhältnis zwischen natürlichem und sozialen Wandel (Teil 1). Teil 2 stellt die Frage, inwieweit Natur für Menschen peripher ist. Dies wird an Beispielen für die sozialwissenschaftliche und interdisziplinäre Veröffentlichungspolitik interpretiert (Teil 3). In Teil 4 wird argumentiert, dass eine wichtige neue Thematik für die Weltpolitik ebenso wie für Sozialwissenschaften die soziale Dimension der Nachhaltigkeit sein wird, soziale Exklusion und Entwicklungsproblematik eingeschlossen. Der abschließende Teil 5 zieht Schlussfolgerungen für historische, theoretische, ethische und politische Aspekte der Mensch-Natur-Beziehung im Rahmen globaler Umweltveränderungen. In der Zuspitzung heißt dies, dass die internationale epistemische Gemeinschaft eine entscheidende Rolle bei der Findung nachhaltiger Umweltbedingungen für eine sozial gerechte globale Gesellschaft spielen kann und soll.

Summary

THE CHANGING HUMAN-NATURE RELATIONSHIP IN THE CONTEXT OF GLOBAL ENVIRONMENTAL CHANGE

The overall objective of this introductory essay is to convey a broad view of social and cultural aspects of global environmental change (GEC). It represents a Western, social science perspective, and reflects on today's discourses as influenced or characterized by the turn from the second to the third millennium. The article opens with some remarks concerning the relationship between natural and social change (part 1). Part 2 raises the question, "to what extent is nature peripheral to humans?" Part 3 focuses on present interpretations of how a millennial shift is experienced: "Do the social and interdisciplinary sciences take notice of the human-nature relationship (HNR) in the context of GEC?" An important new topic in world politics and in the social sciences will be the social dimension of sustainability, including social exclusion and development, as argued in part 4. In part 5, the final section, conclusions are drawn about historical, theoretical, ethico-behavioral, and political aspects of the HNR within the context of GEC. It is concluded that the international scientific community can and should play a vital role in finding solutions to sustain the environmental conditions for the sake of global livelihood, including social justice.

CONTENTS

Introduction

All things change yet never die…
Nothing retains its shape of what it was,
And nature, always making old things new,
Proves nothing dies within the universe,
But takes another being in new forms…
And fortune changes many looks of places.
…For Earth itself
Is like an animal that breathes and sighs
Fires and flames and as she shakes her sides,
New doors are opened for her sighing breath
While others close again…Then as the Earth grows weary
Of feeding fuel to fire – for Earth is old –
Nature herself will starve, hungry, depleted,
Neglecting fires that eat her nourishment…
So times and countries change or weaker, stronger,
To rise or fall within the changing years…
To let you know how all things are mutations –
Heaven or Earth and all that grows within it,
And we among the changes in creation.

Ovid, The Metamorphoses, Book 15, pp. 419-428 (lines 165-456 in the Latin original)

In his *Metamorphoses* or *Transformations*, completed in the year 8 A.D., the great Roman poet P. Ovidius Naso tells the story of changes in nature, mythology, and human history. In particular, the philosophy lecture in Book 15 gives an amazing account of natural and social change that include such themes as global change, the Gaia hypothesis, environmental destruction, and human and political development. Ovid's depiction demonstrates the broad scope of natural and social change; it is the starting point for this attempt to discuss a variety of perspectives concerning the changing relationship between humans and nature in the context of global environmental change (GEC).

The overall objective of this introductory essay is to convey a broad view of social and cultural aspects of GEC. It represents a Western, social science perspective, and reflects on today's discourses as influenced or characterized by the turn from the second to the third millennium. It is concluded that the international scientific community can and should play a vital role in finding solutions to sustain the environmental conditions for the sake of global livelihood, including social justice.

1. Natural versus social change

Relationships between humankind and nature are first of all physical and material: they determine the very substance of and conditions for human survival. But, at the same time, humans interpret and construct relationships between themselves and nature. It is this complex interplay that constitutes and complicates consideration of the social and cultural aspects of global environmental change (GEC). Shifting perceptions relate to physical, economic, social, and cultural changes over time. The changing relationship between humans and nature is an open issue; the cultural and social sciences attempt to interpret it in terms of the following questions: What did the human-nature relationship (HNR) look like before and after the start of GEC? What is the specific difference? When did GEC occur and with what consequences for the HNR? We do not really know the answers to these questions for several reasons.

- Natural as well as social systems are determined by "perpetual change". When change ceases, the system stops functioning and perishes.

- There is disagreement as to the novelty of global change, because there is some dispute over the meaning of the term "globalization". One view is that globalization indicates Western modernity; that it was initiated by Columbus discovering and exploiting the New World, followed, in turn, by the rise of capitalism and the age of technology. This view is based upon the idea that the Renaissance combined wisdom and the power of Mediterranean antiquity with northern European modernity, which really means globalization on a temporal, historical scale. We may note that the dominant view of globalization is entirely Eurocentric.

- Opinions differ as to the values attached to nature and the nature-human relation. These values depend on the degree of an individual's exposure to nature, the needs he or she attaches to nature, the capacity for self-reflection contained in these various concepts and the willingness to abstract from nature. Individuals, ethnic groups, and cultural systems construct their own concepts of nature on which they rely and to which they relate. Stakeholders shape the respective human-nature relationships.

These reasons suggest the following point of departure and focus. Since natural and social systems are characterized by perpetual, uninterrupted change, we shall focus on what appears to be its present mode, at the turn of the 21st century, and its corresponding interpretations, concepts and constructs. Humans and nature: which is central, which is peripheral? The age-old question is again raised. It has ethical and

political consequences; these are labeled respectively as the anthropocentric and, conversely, the bio-ecocentric approach. What is the dominant concept of nature? Nature may mean cosmos, the origin of life, an object for philosophical contemplation or artistic production—not to speak of its practical form as a natural resource serving as a vital factor of economic production. Are there different cultural outlooks, such as a typically oriental or typically occidental perspective? *Ex oriente lux*, enlightenment from Orient, was the belief or romantic fashion at different ages, including contemporary New Age culture.

What is the importance attached to the relationship-to-nature topic and who are the winners and the losers of GEC? In Europe, during the 1990s, environmental issues lost a lot of appeal to issues of job security and the labor market; whereas in the rural developing world, environmental degradation and loss of soil fertility are often synonymous in that they determine income, livelihood, and survival chances—those of rural women more than anybody else (Kiely and Marfleet, 1998; Klingebiel and Randeria, 1998).

Finally, how does the sustainability concept serve in this context and at this point: What is its social dimension and its political outlook? Holistic, interdisciplinary or transdisciplinary approaches have won recognition. Consequences are felt by the research community who have become stakeholders in this field. The mode of knowledge production will change, and this implies yet another relationship: that between the natural and the social sciences as well as that between the sciences and the participatory involvement of other (non-scientific) stakeholders affected by GEC. In the political arena, global environmental politics is becoming a strategic issue as conflicts over water have already shown: environmental security (Brennan, 1999) follows military (Aspen Institute, 1999) and food security (Schulz, 1999). Structural policy is needed to give global change a proper shape (Schellnhuber and Pilardeaux, 1999).

2. Nature: Is it peripheral to humans?

As we use ever bigger telescopes to observe the universe, such amplification technology also enables us to literally view the past. We are not too far from witnessing the "birth" of the universe: Empirical evidence will tell us which hypotheses and theories are to be falsified. Light travels at a velocity of approximately 300,000 km/sec, which means, for instance, that it takes sunlight a full eight minutes to reach the earth. These simple and well-known physical facts have theoretically interesting implications as scales increase.

Imagine that we can see and photograph a galaxy at a *distance* of one billion light years away! Since the light we've thus observed has been traveling for so long a *time*, namely one billion years, we are, from a human standpoint, literally looking into the remote past without even knowing whether what we observe still exists "at present".

The Copernican revolution revealed the fact that the Earth was not the center of the universe, or even the center of the solar system. Our earth is simply a minute and by no means unique particle somewhere at the periphery of our galaxy, the "Milky Way", and also of the presently known universe. This revelation could not be publicized freely at the time, because it hurt the interests of an important 16th century "global player" and stakeholder, namely, the Catholic church. Throughout most of Europe, the Church held a monopoly on the interpretation of not only all metaphysical matters, but also the view of the world and all worldly matters. The Church of Rome represented God the Almighty on Earth, so it claimed, as an institutionalized human trustee; it intended to expand the domain of its monopolistic trust around the globe, along with the worldly powers that used fire and sword to subdue the rest of humanity. So this interpretative and explanatory competence meant power, in a subtle way perhaps. The promulgation of the new heliocentric theory by the Polish astronomer Nicolaus Copernicus (1473-1543) and the rise of science as a whole thus challenged the authority of the Church and its cultural imperialism.

Today, half a millennium later, we witness a second Copernican Revolution (Schellnhuber, 1999) which calls our attention back to planet Earth. The "Earth system" as a whole is to be analyzed. Understanding it is the basis on which to develop concepts of and for global environmental management. Earth-system analysis (Schellnhuber and Wenzel, 1998) is the holistic and transdisciplinary attempt to model and simulate the ecosphere, i.e. the geosphere-biospheric complex, including its climatic history as far back as half a million years ago. This is an endeavor that takes the Gaia hypothesis seriously—the paradigm that interprets the Earth system as a cybernetic whole endowed with a self-regulating capacity (Lovelock, 1979). The basis of this theory is hardcore empirical data that demonstrate that self-regulating biospheric mechanisms have kept the Earth's crust stable and its environment habitable. Biospheric evolution eventually produced humankind.

After four and a half billion years of natural and eventually cultural evolution we have learned two things. First, we are capable of continuously undermining the conditions for our own survival. Global environmental change in the destructive mode

can be seen, for instance, in human activities such as oil spills and toxic waste proliferation, perforation of the stratospheric ozone layer (thus exposing us to more UV-B radiation), or nuclear warfare. Second, we have developed—perhaps to a lesser extent—the ethical and managerial tools to protect and safeguard the global environment against forces of destruction like those just mentioned (Parry and Livermore, 1999; Pearce, 1999).

Again, interpretative and explanatory competence has a significant role. Unlike 500 years ago, when enlightenment and the rationality of science freed humankind from religious obedience to strive toward self-determination, it may now be the interpretative dialectics of mythology that reveal the destructive mode of science and technology: Humankind has become simultaneously Shiva and Vishnu, the Hindu gods who represent the concepts for Destruction and Preservation, respectively.

3. The millennial shift: Gnosticism and the environment

Today, at the beginning of the third millennium (*anno domini* in our Christianity-centered temporal accounting) environmental management has to cope with global environmental changes. Fears of global destruction and extinction witnessed the earlier transition from the first to the second millennium. According to the doctrines of Gnosticism, salvation could be attained only through the pursuit of spiritual truth and the transcendence of matter. Jesus Christ was considered by Gnostics to be noncorporeal. In keeping with this doctrine was the belief that the beginning of the second millennium would bring about the spiritual age. Gnosticism incorporated an apocalyptic and chiliastic vision of nature's decline and God's ultimate reign over Earth, 1000 years after the birth of Christ. Chiliasm is the doctrine stating that Christ will reign on Earth for 1000 years; ancient gnostic knowledge and belief originated in Mesopotamia, Syria, and Egypt, around the Mediterranean, and were revived by Scotus Eriugena in the 9th century (Voegelin, 1952 and 1959).

At present there seems to be a lack of interest in environmental (including GEC) issues, specifically among social scientists. In the following I draw a parallel between the lack of interest in the natural world on the part of many social scientists and the lack of interest in the physical world by Gnostics. My thesis is that some "concept-oriented" or "social-constructivist" social scientists are, or behave as if they were, Gnostics. As proof of this, I briefly review some current journals in the field that devote special issues to the recent millennial shift.

Independent of theories that explore such parallelism, the review provides an insight into which topics outstanding academics and editors of prominent journals consider of paramount importance during an historically important period. Some historical dimensions and explanations concerning the development of sociology and the motives of its representatives are presented as these relate to the HNR.

Is GEC and/or the changing HNR of interest to social scientists? A few international academic journals focused their last issues in 1999 (or the first issues in 2000) on millennial aspects: the transition from the second to the third millennium, its meaning and relevance for the development of social or interdisciplinary science. Let us have a look at four of these journals and their topical issue: two interdisciplinary publications and two specialized publications in sociology. I begin with the interdisciplinary publications, *The Ecologist* (1/2000) and *Universitas* (December 1999), a German-language journal whose readership is mainly among university instructors and students. Both millennium issues concentrate on gnostic themes.

The Ecologist (1/2000) deals with the "cosmic covenant"—"re-embedding religion in society, nature and the cosmos". Emphasized is "the role that religion can and must play in saving what remains of the natural world", as Edward Goldsmith puts it in his editorial. Knowledge and values that attributed the utmost priority to the preservation of the creation were once propagated by the various religious groupings or cultures. The rediscovery and revival of ecological themes and cosmic theologies appears to be an environmental priority. The theological underpinnings of most religions relate the individual to society, the natural world, and the cosmos. Mainstream science committed the "ultimate blasphemy" in that "*Homo scientificus* has deified himself"; mainstream religion has lost its way and needs to return to its roots. Noah's flood symbolizes the forces of chaos. Historical storms and floods in Orissa (India) or Vietnam may remind us of this archetype human failure to observe the cosmic covenant, that is, to fulfill our contract to live in harmony with the laws of nature and the cosmic order (Goldsmith, 2000a, 6-8). Religious inspiration and perennial beliefs are to be found among the primal creeds or religions because these derive from the cosmic covenant—the universal revelation given to humans (Griffith, 2000). Tribal stories maintain such wisdom and its ecological message (Wilson, 2000). So did classical mythology and the ecological worldviews of ancient societies such as those of Greek, Chinese, Egyptian, Indian, or Persian antiquity, by using the notion of the "path" that must be taken to maintain the cosmic order on which human welfare depends (Goldsmith, 2000b;

Chaitanya, 2000). Related cosmic and ecological insights are quoted for the Islamic and the Judeo-Christian traditions, to some extent influenced by the ancient civilizations (Nasr, 2000; Murray, 2000; Barker, 2000; Rossi, 2000; Roth, 2000; Echlin, 2000). The cosmos was embedded in the Church until western scientific thought replaced the term "creation" with "environment", thus separating human from non-human nature. The message of the special issue of *The Ecologist* is that such desecration of the cosmos ought to be reversed in the third millennium.

Universitas (December 1999) entitles its special millennium issue *"Endzeiten, neue Zeiten?"* (Final age, new age?) and focuses on topics of transition (Geissler, 1999) between the two millennia. Western industrial societies have eliminated many rites of passage and transition; the symbolism of fireworks, for instance, whose original intention was to vanquish "evil spirits", has been lost. Instead, the transition from the second to the third millennium has been marked by spectacular events not necessarily of universal importance or interest such as who (in somebody's town) gives birth to the first millennium baby (Hilgers, 1999). In a similar way, the great issue of the apocalypse has changed. Originally, St. John, the Divine, pictured the apocalypse in *The Book of Revelations* as the vision of salvation coming about after a transitory collapse. This "transitory collapse" is itself frequently referred to as the apocalypse. The visionary apocalypse represented the advent of the millennial God's reign on Earth, the „New Jerusalem" as it was called. In the 20th century, Hitler and Stalin were associated with the advent of the apocalypse. The transitional period during which both leaders were in power was an extremely violent and bloody episode, characterized by massive internment in concentration camps and *gulags*, and massive human slaughter, in particular genocide. All of this was designed to "purify human blood" or to convince people to adopt the "right doctrine", for the purpose of achieving some perfect millennial Third Reich or ideal post-historic age of communism. Yugoslavia has witnessed a sad revival of apocalyptic nationalism. The cyberspace apocalypse, fortunately somewhat less deadly, has led us into the third millennium. Virtual reality represents the "New Jerusalem"; the cybernaut, as the "new human", exists independently of bodily needs and achieves immortality as part of the permanent memory of a computer network. St. John's "millennial Third Reich" becomes the age of knowledge beyond the ages of agriculture and industrialization (Vondung, 1999). The fear of collapse was stirred up by the "Y2K problem", the possibility of a global computer network breakdown. This was originally a technology problem that was

heavily and massively "mythologized" perhaps because billions of dollars were at stake (Csef, 1999). Among the many predictions concerning the year 2000, the 1972 Club of Rome report on the limits to growth was misunderstood as a model to predict the real breakdown of the global economy due to resource depletion, environmental degradation, and population explosion (Schmid, 1999). To summarize, Gnosticism plays a vital role in the *Universitas* millennium issue. Global environmental change and changing human-nature relationships are included but do not feature centrally.

Globalization is featured outside the main section of that special issue in an interview (Reif, 1999) conducted with Harold James, a Princeton University historian, who speaks of globalization beginning in the 19th century and suggests that while the process may be deplorable for some, it is nevertheless irreversible. James cites earlier historical events and occurrences as evidence for globalization, such as the first transatlantic cable in 1866, the New York stock exchange crashes of 1906 and 1907 and their immediate repercussions on the European stock markets, or unifying global trends in fashion, including the Japanese adoption of Western dress and fashion, and similar trends in the fine arts since the age of the Renaissance. As one reaction, globalization has also provoked some outcry such as the one referring to it as the "globalization trap" (Martin and Schumann, 1996) or critics in the developing world who say, "globalization equals imperialism". Earlier (just as they are today) protective tariffs were designed to bar international competition. Welfare and social legislation was designed to strengthen the nation state. Visionary "third ways", such as an attempted balance between the market and planned economy, are viewed by some as roads leading directly into Third World underdevelopment. GEC and the HNR do not appear to be connected with globalization in the sense it is used here.

The sociologist's world view, similarly, seems in general to be less environment related and nature minded. We shall now turn to two sociology journals and consider their millennium special issues.

The British Journal of Sociology (1/2000) and *Current Sociology* (4/1999) take up the millennial problematique, the latter focusing on "the future of sociology and the social sciences", the former on "sociology facing the next millennium". This could be an indicator of the importance attached to the issue of global change and the nature-human relationship by eminent mainstream sociologists. The latter journal invited its contributors to consider "what the Millennium might indicate about the history of 'human societies' and especially how 'sociology' is facing up to the challenges and

opportunities posed", and to provide "analyses of such transformations" (Urry, 2000a, 1). Manuel Castells opens the volume by proposing a grounded theory of the "network society" as the social structure of the "information age". The networks are empowered by the new communication technologies and reshape the relations of production, consumption, power, experience, and culture. "Ecologism" is an example of an alternative network in opposition to dominant networks (Castells, 2000). Since the 1960s, "globalization" (along with complexity analysis and cultural studies) has transformed the context of sociology, according to Immanuel Wallerstein. He proposes a unified or re-unified historical social science as a truly global exercise (Wallerstein, 2000). Göran Therborn documents the shift from a universal to a global sociology in the second century after sociology became a discipline. He forecasts a comparative and competitive focus among the neighboring disciplines—sociology, political science, and economics—rather than along the social-versus-natural-sciences divide (Therborn, 2000). Cross-cultural, empirical comparison of societies in transformation, without worrying too much about theoretical concerns, is advocated (Esping-Anderson, 2000). The conflict between the "patchwork quilt of nation-states" and the "cosmopolitan order of human rights" may open the door to the "second age of modernity" (Beck, 2000). Contributions on urban sociology (Sassen, 2000), cultural diversity and the internet (Featherstone, 2000), and "mobile sociology" (Urry, 2000b) conclude the volume.

Dissenting from the "social sociology" orientation, a "natural tilt" can be detected in subsequent contributions. Science and technology studies and the social explanation of natural scientific facts work towards a "physical sociology" and its epistemology (Latour, 2000). The focus on socio-environmental theory and the case of genetic modification of food reveal that the "social sciences' relationship to nature and environment matters" (Adam, 2000, 125). "Timescape" is conceived as the temporal equivalent of landscape. The timescape analysis of socio-environmental matters brings "contextualized temporal complexity to the heart of social theory". Thus the time aspect is central to understanding sustainability and its emphasis on nature's regenerative capacity. Intergenerational equity and cultural equity are at stake—the ownership of reproduction has been transferred to transnational companies. A "time-sensitive scholarly enterprise is . . . the task that confronts social theory at the beginning of the new millennium" (Adam, 2000, 137-140).

Current Sociology (*Volume 4*, Number 4, October 1999) reports the results of the symposium on "The Future of the Social Sciences in the 21st Century" which was the

concluding session of the XIVth World Congress of Sociology in Montreal in August 1998. The whole issue dwells on the pros and cons and various aspects of interdisciplinarity, of opening up to and collaborating with neighboring disciplines. Disciplinary boundaries should be negotiated, not simply closed down. To think in "space-time" and touch geography and history is recommended (Massey, 1999; similarly Allardt, 1999). An active interdisciplinarity is needed, in particular with economics, and also a transdisciplinary or intercultural approach (although the latter terms are not used explicitly, the idea they encompass is implied) to link up with different regions or countries in the age of globalization (Boyer, 1999). Finally, all fragmented perspectives, including those of singular, exclusive disciplinarity, ought to be abandoned in favor of a theoretical unitary reconstruction of the social sciences, if we wish to avoid both the "barbarism of economist reductionism" and the "conservative nihilism of postmodernism" (Boron, 1999).

Are the millennial issues representative of social science and interdisciplinary thinking? Do they address the pressing environmental themes substantively and sufficiently? To take up the scope of interdisciplinarity is certainly laudable *per se* and represents present-day *avantgarde* scientific development. The scientific base, though, appears a little narrow as the natural sciences have been left out, by and large. The HNR in the context of GEC was obviously not considered to be of major concern in the wake of a millennial shift. A few environmentally based and theoretically challenging contributions were competently put forward in the British Journal of Sociology. They do not, however, constitute anything close to a social science mainstream movement. To construct a concept of nature and the HNR is hardly even attempted. What are the conclusions as to the relevance of the HNR and GEC for the social science mainstream? Has there been visible change?

Let us briefly review some specific aspects of the environmental sociology discourse as it began in the 1970s (we set aside the Chicago School of sociology in the 1920s) along with the global environmental movement. We argued earlier (Glaeser, 1996) that environmental sociology became established as a sociological sub-discipline in the United States within the short time sequence from 1978 to 1980. The theoretically ambitious goal at that time was to acknowledge physical and biological factors as independent variables to influence the dependent variables of social structure and social behavior. This was intended to become a new paradigm within the sociological knowledge canon to turn the sociological mainstream towards an HNR concept.

The new disciplinary paradigm was defined through transforming the "human exemptionalism paradigm" (earlier called the "exceptionalist paradigm") into the "new ecological paradigm" (Dunlap and Catton, 1979, 250). Traditionally, the dominant world view had been to accept humans as the one unique and superior creature on Earth, capable of quick adaptation to environmental change for cultural rather than genetic reasons. The new ecological paradigm also deviated from a specific sociological tradition established by the early French sociologist Emile Durkheim (1858-1917), who postulated that social facts can only be explained by other social facts. In a most authoritative assessment, Buttel concluded in 1987 that environmental sociology had found recognition as a specialty within sociology. It did not succeed, however, in redirecting mainstream sociology (Buttel, 1987, 483-484). In our view, Buttel's evaluation was still valid in the 1990s (Glaeser, 1996, 34); it provides the historical background and a broader base for the millennial focus discussed above.

There was one innovation, however, that gradually altered the social science outlook. During the preparation phase of the UNCED Rio summit in 1992, GEC came up as a new political and scientific paradigm: In 1987, the theme had not yet been included in Buttel's (1987) state-of-the-art review and agenda for environmental sociology. Once again sociology was slow in the uptake. An early exception to this was a contribution by Buttel and Taylor (1992) who advocated in favor of the society-nature relation as a social construct; they argued as well that the GEC topic was a social construct simultaneously serving as a scientific concept and as a way of mobilizing the community of scholars. In short, environmental science and environmental movements are complementary. To date, we might interpret that proposal as an early attempt to integrate environmental stakeholders in a transdisciplinary scientific approach. Even at present, the HNR theme within the GEC context is still not social science mainstream, but it has gained momentum as will be demonstrated below. This is especially the case for the sustainability discourse in the context of the social situation in the early 21st century. The remaining parts of this contribution will examine somewhat more closely the social dimension of sustainability and present some consequences with respect to historical, theoretical, behavioral and political aspects of the HNR within the GEC context.

4. Sustainability: the social dimension

What matters about GEC and sustainable development is the "human dimension". The difficulties become obvious when operationalizing this idea is taken fully into account (Rotmans, 1998; Rockwell, 1998). The concept of global change (GC) is broader than that of GEC. GC refers to "the totality of changes on the planet Earth, including all human intentions and alterations" (Rotmans, 1998, 423). It involves both the biophysical and the human system, whereas GEC refers to the human-induced biophysical changes only. To disentangle the natural from the anthropogenic changes within the GEC framework represents a major exercise fraught with difficulty.

The sustainability concept, according to Merle Jacob, is ambiguous; its "utility diminishes when one tries to operationalize the concept" (Jacob, 1996, 27). The ambiguity, oscillating between an anthropocentric orientation that focuses on the needs of future generations, and an ecocentric view that concentrates on living within the carrying capacity of supporting ecosystems, owes much to the normative character of the sustainability concept, as Rotmans argues, and depends on the cultural perspective of the actors using it. Hence different cultural perspectives would have to be elaborated and translated into different preferences so as to arrive at an operational definition of sustainable development that is linked to the notion of global change (Rotmans, 1998, 423-424 and 447-449). The categorization of cultural perspectives and biased preferences could be linked to Dunlap's and Catton's (1979) paradigmatic shift and dichotomy between the human exemptionalist (exceptionalist) and the new ecological paradigm.

Sustainability emerged as a new development paradigm out of the concept of "ecodevelopment", its predecessor. The term was popularized by the Brundtland Report, "Our Common Future", from 1987. The goal was to reconcile environment and development, yet there was a strong bias in favor of environmental sustainability, which, of course, was necessary to counterbalance the strong emphasis on economic growth.

What is social sustainability? When we discuss social, or perhaps more appropriately societal, sustainability we can build on a relative consensus by saying that we are searching for the criteria to explain why and how societies are sustained. It would then be possible to make some reasonable predictions about the future. We reckon with six to eight thousand years of human civilization composed of, say, 200 to

300 generations of people. Biologically speaking, this is minute even though we tend to think of it as a relatively long period in historical, political and sociological terms.

What are the factors that maintain or help maintain a social entity for a longer period of time, such as a social group or society at large? Putting the question like this, hints at a quick and simple answer. On closer investigation, however, we see that it might involve the totality of social science theory including those parts that are yet to be written. With all of these constraints in mind, W. Serbser (2000) in a contribution to *Gaia*—a Swiss-German, multidisciplinary journal covering ecological perspectives in science, the humanities, and economics—suggested the following procedure. Let us identify those or some of those necessary conditions without which social (societal) survival would not be feasible. We talk about formal requirements in a pragmatic sense: they should be independent of each other, yet in combination constitute the societal context in a total bio-cultural sense. Six preconditions (three cultural and three ecological) for a sustainable human society are suggested. The cultural order contains social action, constitution of social groupings, and their transformation in the sense of social change. These conditions for societal sustainability are contained in and derived from established contributions to sociological theory. The ecological order includes social space, social metabolism, and dominance.

Social action is intentional and linked to symbolic systems such as our language which is sufficiently imprecise to enable us to deal with complex issues. Social groups or social units qua subsystems are constituted by the notion of self-identity and, complementarily, by a sharp outline defining other, competing social units. These groups undergo a constant process of reorganization, that is, transformation or social change. Social groups need a spatial environment as a constituting frame. Social space defines the situation of social action; it determines symbols and language. Social metabolism refers to the activities and interactions of social groups: they produce, they consume, and they reproduce themselves, under a regulatory framework of legal and ethical principles. Dominance, finally, refers to social control, the power structure, and governance (including the system of checks and balances).

All six features—social action, social groupings, social change, social space, social metabolism, dominance—according to Serbser (2000), work in combination and, as an interacting set, they determine the survivability and sustainability of a society. But (as Serbser notes with regret) these features and their interaction have hardly been taken into account in the social sustainability discourse.

As these ideas are very recent they are necessarily still somewhat vague. The yardstick to measure the degree to which they are analytically concrete and applicable could be as follows: First, they could serve as a tool to facilitate the determination, perhaps on a quantitative scale, of whether or not any given social (or societal) situation is sustainable. Second, in a more dynamic sense, they could produce recommendations for the implementation of measures as an incremental approach to societal sustainability.

The examples of integrated and sustainable coastal management or the deep sea commons, to take extreme and topical examples for regulated social processes, show that inequalities or simply competing interests need to be negotiated in a process of mutual control and bargaining. Even if some disagreement remains, consensus must be reached on the degree of disagreement accepted. If this does not happen, social exclusion will occur, either voluntarily or as a result of external force. The state or process of social exclusion is certainly not a sustainable one because there will always be group members, be it individuals or states, that will aim to reverse a dissatisfactory situation. It may thus be concluded that consensus building by negotiation indicates a state or process of social sustainability. We may term the absence of such indicators "negative social sustainability".

Global inequality is a topic that was discussed extensively in the 1970s—on an international scale, as early as 1972, during the United Nations Conference on the Human Environment (UNCHE I) in Stockholm (Glaeser, 1997, 103-105) The theme took on a new dimension during the GEC debate. More explicitly than ever before are North-South relations and inequalities linked to environmental problems that have been intimately connected with livelihood concerns. After the "lost decade" of the 1980s, following the two oil crises of 1973 and 1979, characterized by huge public debts and structural adjustments in the South, GEC is not defined within a social or cultural vacuum (Redclift and Sage, 1998).

Environmental problems are viewed differently in the South than they are in the North. "Poverty ecology" gives priority to livelihood concerns (Agarwal and Narain, 1991); focus is on the impacts of trade liberalization, the repayment of international debts, and structural adjustment. These aspects of globalization differ markedly from the lifestyle concerns characteristic of Northern "wealth ecology". Here the environmental problems associated with GEC are climate change, acid rain, ozone depletion, loss of biodiversity and the collapse of fisheries in various parts of the world.

Two decades after the United Nations Organization's General Assembly had declared the "drinking water decade" in 1980 (Glaeser and Phillips-Howard, 1983), the absence of clean drinking water is still considered to be the major environmental problem for millions in the South, causing disease and epidemics as recently illustrated in Mozambique in 2000. The IMF policy and other adjustment policies may be responsible for environmental degradation when resource needs increase or additional pressures are exerted, for instance, on marginal soils or common goods. Two striking examples of this are forest depletion due to firewood extraction or fish stock depletion in coastal waters due to over-fishing and eutrophication.

Equity conflicts are social sustainability conflicts. The South cannot sustain itself in social terms if social inequalities exist. To reduce inequalities means to come closer to intragenerational equity which, on the other hand, could contradict intergenerational equity, that is, the care for future generations. Both equity issues could contradict the policy of environmental efficiency using energy tax incentives or tradable pollution permits. The latter issue, equity versus environmental efficiency, is based on the value we as a global society attach to nature, concretely to the service functions of the global ecosystem, such as the environmental cleanup function—nature's own regenerative capacity. Global commons, such as the oceans, are global sinks; they absorb, in particular, many carbon-based pollutants. Forests, too, act as global sinks in the sense of "pollutant absorber" but, unlike the oceans, are nationally owned. Social justice in the sense of intragenerational equity, for instance, in the case of forests, would thus call for compensation to be paid to the owners of common goods by the polluters. According to Redclift and Sage (1998), a "global contract" would mean that Southern development concerns would have to be met before Northern "global" environmental issues are contended with. So we have come full circle back to where we started 1972 in Stockholm! Environment versus development.

From the "developing world" point of view, poverty reduction, redistribution of wealth and socioeconomic equality or at least equity may be the main issues of social sustainability—environmental sustainability being its prerequisite. Some term it "participation", "consensus building through negotiation and social competition", or "the absence of social exclusion". The overall theme is social justice. In a useful synopsis, Goodland (1995, 3) produced a table in which social, economic, and environmental sustainability are juxtaposed. Following a widely accepted definition, sustainability means maintenance of capital. Capital embraces a social, a human, and a

natural form. Social (or moral) capital is constituted, among other things, by tolerance, compassion, patience, cultural identity, community cohesion, honesty standards, laws and institutions, and discipline, and requires maintenance in terms of shared values, equal rights, community participation, and religious and cultural interaction. The creation of social capital is needed to achieve social sustainability. Conversely, there can be no social sustainability without environmental stability—the latter providing the basic conditions for the former.

Environmental sustainability (as a prerequisite for social stability) means that natural capital must be maintained. Human welfare is to be improved by protecting raw material sources and by ensuring proper sinks for human wastes. Renewables are to be kept within regeneration rates; the depletion rate for non-renewables must be kept within the renewable substitution rate. The amount of wastes produced should not exceed the assimilative natural-environmental capacity. "Scale" is thus added to efficiency and allocation as a third economic criterion. It constrains the throughput of energy and material through the economic subsystem and thus controls the use of natural capital from environmental sources to sinks.

Economic sustainability means holding the scale of the economic subsystem within the biophysical limits and includes production and consumption. Economic sustainability "devolves on consuming interest, rather than capital" (Goodland, 1995, 3). As economists value goods and services in monetary terms, major problems arise when natural capital is to be valued. This is especially true for resources of common access such as the oceans or air. The problem becomes all the more complicated, once we realize that more than just economic values are attached to natural goods and services. Our understanding of individuals' values is limited; to understand and evaluate choices is a cross-disciplinary exercise. Ideally, economic values are represented by market transactions. If there is no market, as in the case of common access resources, transactions may be replaced by consumers' willingness to spend time or money to gain access, or by their willingness to reveal a preference for a site or a style of recreation (Lockwood, 1999, 392). The willingness-to-pay approach to elicit environmental values may be complemented by participatory social deliberation as a means to inform the environmental decision-makers (Brouwer, *et al.*, 1999).

There are obvious limits to the economic valuation of nature and the environment. Economics can certainly not cope with what philosophers term intrinsic values of ecosystems, non-human species or the inanimate nature. Whether intrinsic values are

justified and necessary for an environmental ethic is still a matter of dispute. The top value in a value hierarchy may be assigned to human survival or human quality of life on one side, or to landscapes and the natural world on the other. These values will eventually be incorporated into decision processes and depend on (often conflicting) positions held and adopted by stakeholders (Lockwood, 1999, 386). Values and norms must be activated by cognitions specific to the environmental context, for instance, by adverse consequences anticipated for humans (anthropocentric value orientation) or for natural ecosystems (biocentric value orientation). Socio-psychological models are used to measure environmental values and attitudes, and to research whether these have been processed and transformed into corresponding behavior (Dunlap and Van Liere, 1978; Stern *et al.*, 1993 and 1995, among others). Held values reflect social settings and norms and interact with policy issues. To incorporate environmental values and behavior into political decision making would certainly enhance social sustainability.

It appears that there has been a shift in the "logical hierarchy" of sustainability whereby the need for social sustainability is a motivating factor to pursue environmental sustainability which, in turn, depends upon economic sustainability. In this sense, the approach followed appears to be anthropocentric, notwithstanding the fact that the notion of sustainability is inspired by the care for nature and the preservation of the environment, which may be termed "enlightened anthropocentrism" (Summerer, 1989, 274). Environmental care can be integrated into authentic human development. Authors who agree with this to some extent normative statement will still disagree as to what is included in "human" development. If it is a rather qualitative concept in the sense of human well-being, measured in terms of health, knowledge, social order or community, it may not correlate closely with the quantitative concept of economic growth and material affluence (Dower, 2000, 42). The question of values shows up again in the problem of alignment or non-alignment of social and natural change, in the Western world view and "enlightenment imperative" to control and use nature, and in the dilemma between development and environment.

It is fairly obvious that social sustainability and negative social sustainability to a large extent depend on the theory (or theories) involved. Sustainability and its converse are theoretically constructed but this does not mean that they are untrue or unreal: The notion of social construction simply implies that social action relies on social concepts, and that social concepts depend on perspectives some of which are scientific. Social constructs determine not only the notion of social sustainability, they also determine the

notion of environmental sustainability and, as a consequence, the relationship between humans and their social and natural environment—between societies and nature. These relationships change as the underlying concepts change. The most recent of such transformations occurred in the context of what is most commonly termed, accepted, and constructed as GEC, global environmental change. The natural and the social sciences frame their variegated perspectives to deal with methodologically proper aspects of the HNR. Again, these perspectives are constructed in terms of scientific convention, and from the historical and methodological standpoint represented by a given discipline. Dissidents in different disciplines agreed on a dissenting perspective: that is, a unifying approach. Their scope has been integrative as opposed to analytical—compartmentalized. The holistic approach to dealing with human-nature relationships of various kinds and in a multitude of facets has been called "human ecology". Human ecology, enriching the synthetic and systems oriented ecological outlook with the social and cultural human actor approach, eventually became a new academic field and subject of its own.

5. Conclusion: globaloney or what?

What conclusions can we draw with respect to HNR and their changes within the GEC context and at the historic turn of the third millennium? We may sort and distinguish between aspects related to history, theory, ethics and behavior, and policy.

History

The public in most countries seems to be poorly informed about global risk issues. This is the outcome of an international survey of public awareness and concern about environmental problems conducted in 1992 by the Gallup International Institute in 24 nations, diverse in terms of their geography, economics and social settings. Yet, even if laypersons have a limited understanding of global warming in a more technical sense, "the issue's appearance as a visible social problem has surely heightened the public's general sense that humans are having a detrimental impact on the environment" (Dunlap, 1998, 489). These concerns extend from the local to the global environment and include the various aspects of the environmental problematique. Ecological awareness has evolved over decades, beginning in the 1960s, and has developed into an ecological worldview. Public attention may oscillate in accord with fluctuating media attention, but it is unlikely to disappear altogether. Environmentally oriented social movements and organizations have mushroomed in the North as well as in the South.

To what extent public awareness translates into behavioral changes is a matter of dispute and ongoing research.

The findings on varying degrees of public awareness, on a basically high level, are supported by a media survey covering the American mass media in the ten-year period from 1987 to 1996 (Mazur, 1998). Until the late 1980s, environmental attention had focused either on biospheric issues exclusively, such as the destruction of rainforest or species extinction, or atmospheric hazards exclusively, mainly global warming, acid rain, and ozone depletion. Theses issues began to cluster during the 1987-90 period, showing up as global problems. This was also a period of rising media coverage resulting in widespread public attention. Some of these hazards were connected, for instance, the greenhouse effect, discovered by Svante Arrhenius in the 19th century, the ozone hole, discovered in the early 1970s, or the extinction of dinosaurs presumably owing to debris blocking sunlight and cooling the atmosphere significantly. A drop in the coverage of GEC in the media can be observed for the period from 1992 to 1996, following the Rio summit. There are several explanations for this decline, none of which seems to be wholly satisfactory (Mazur, 1998, 468). One plausible explanation, however, is that new story lines such as the downfall of the Soviet Union and the breakup of satellite countries in the early 1990s, or the Gulf War in 1991 had greater appeal for journalists and news agencies in an evolving age of news qua entertainment: "infotainment".

Theory

Global change issues and the HNR are polarized between epistemological idealism and epistemological realism. The distinction between the two positions appears clearer than before despite the fact that there has been a certain tendency to tackle conventional environmental problems "subjectively" in the social sciences and "objectively" in the natural sciences: environmental awareness and reflexivity versus "hard" facts and measured observation in environmental "reality". Philosophers today may recall a comparable situation in the late 18th and the early 19th century when the German philosopher, Immanuel Kant, resolved a similar academic conflict.

Contemporary social science investigations have either evolved along the path of social constructionism (or constructivism), representing neo-idealism, or they have followed an orientation that "presupposes a material world independent of percipient human actors" (Rosa and Dietz, 1998, 431)—neo-realism.

The neo-realism guides the social and scientific analysis of environmental changes as well as the political economy interactions between environment and society. A famous example is the still influential IPAT model which was proposed in the early 1970s and assumed that environmental impact I is a function of population size P, affluence per capita A, and technological development T. The systems approach in world modeling simulates similar relationships on the basis that there are crucial driving forces that regulate the system and that are probably influenced by policy and politics. Social scientists have often criticized such concepts for being too simplistic. The approach, they argue, is too mechanistic and does not reflect human agency to the extent that it is actually present, that is, the complexity and reflexivity of social action and political response (Rosa and Dietz, 1998, 431-437; Glaeser, 1995, 11-36).

The neo-idealist orientation towards problems and research on environmental change issues highlights two aspects: (1) the uncertainties in the body of knowledge and the scientific knowledge claims and (2) the attempt to provide explanations for scientific and public recognition of the environmental change problem as influenced and shaped by historical, social and political forces (Rosa and Dietz, 1998, 441). On this approach, the emergence of scientific concern and the rise of public awareness are scrutinized; these issues eventually become more important than the environmental problem under dispute. Environmental threats to the global ecosystem or human health are perceived only to the extent that they attract media attention and are publicized accordingly. To a great extent, the social constructivist approach is reflexive, and it is applied as a science of science—meta-theory. Constructivist methodology is useful in detecting critical shortcomings in realist models which may be based on or entail false (or at least uncertain) assumptions. Social constructionism, on the other hand, has been criticized for neglecting real world problems and concerns in that human-nature relations and environmental change issues are constructed or conceptualized, that is, "produced" or "created" rather than "extracted" or "mapped".

It seems wise, then, to re-adopt the Kantian position in the sense that the strongholds of epistemological idealism and realism are to be combined. The critical potential of social constructionism should be retained without forgetting that the survival or livelihood problems humankind is facing do not disappear when we turn our attention away from them. We may cautiously suggest that the issue of GEC has largely been adopted by natural scientists who view themselves as realists. The underlying models and assumptions ought to be scrutinized by reflecting which construction

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represents which stakeholders' interests. The issue of HNR, on the other hand, has been taken up through idealist social science and theory of science. What is at stake here are HNR changes over time, space, and culture; the social construction of GEC themes is among the relationships under consideration. Recent examples of this include the identification of driving socio-political forces behind GEC, closely related to factors of modernity (Wilenius, 1999; cf. Spaargaren and Mol, 1992; Mol and Spaargaren, 1993); an "heuristic reading" of classical sociology texts to provide theoretical insights into GEC studies (Prades, 1999), or the "sacralization of nature" and cosmocentric mythology (Giner and Tábara, 1999).

Ethics and behavior

We take a closer look at the mythology issue since it takes up behavioral aspects and the ethical complex with respect to ecological rationality. Religious responses to GEC may inspire modifications in how we treat the world environment, this in turn having repercussions for how we conceive human actions and what we deem to be a rational social order. These conceptions have shaped—for certain ecology-minded groups in society, at least—the present cultural situation which interprets GEC as risky. It is argued that eco-religion is a necessary condition to implant ecologically rational behavior. Environmental anxiety coincides with the chiliastic movement (cf. section 3 above) which views (eco)religious disobedience as cause for apocalypse. Global change and growing scarcity are seen as a consequence of our environmental misconduct. Religious responses shift from monotheism to pantheism, whereby "nature qua God" (*deus sive natura*) becomes the object of worship. Examples like Lovelock's Gaia hypothesis or the deep ecology movement illustrate well how this potential can grow into a firm religious belief. Global ecological rationality will emerge as a new form of rationality and induce new cultural contexts of action affecting personal individual behavior and action to mitigate environmental destruction. Whereas eco-religion will eventually die, its "behavioral aspects may still remain . . . with future generations. The ecological ethic will thus survive the spirit of the corresponding religious beliefs that inspired it . . ." (Giner and Tábara, 1999, 75).

While the notion of ecological rationality considers the intricate relationship between religion and science, the mechanisms and processes for social change as a means to achieve global ecological rationality are not revealed. Still, it should be noted in our context of HNR that the metaphysical and ethical components of transformation

are linked to "social behavior and policy formation as they relate to GEC" (Giner and Tábara, 1999, 60), and as they are finally incorporated into everyday culture, manners and lifestyles of the world population, forgetting their eco-religious roots.

Policy

Environmental policy and management represent the human action approach to GEC in the HNR. Globalization includes global environmental policy and management. Global environmental problems cannot be solved at the national level but the national level will still retain its importance and role in the development of environmental policy. The subsidiarity principle is pursued by the European Union. It means that a higher policy level replaces a lower policy level only if the lower level cannot appropriately take care of the problems under consideration. The subsidiarity principle is expected to be adopted on a global scale: Local environmental problems should be tackled locally; global problems should be dealt with globally. The prerequisite that there be competent global scale actors to manage this, has thus far not been fulfilled. There is no "World Environment Organization" that has the power and the standing of the World Health Organization or the World Trade Organization. The global environment is regulated by Multilateral Environmental Agreements, such as the 1997 Kyoto Protocol which regulates the reduction of greenhouse gases. The agreement acknowledges global commons to which open access is denied. To date there are more than 170 multilateral agreements to regulate environmental protection on a global scale. National participation is voluntary; not all countries sign or participate in such agreements. Whether an agreement is supported or opposed depends very much on the international "epistemic communities" that represent expert networks and act across national boundaries (Petschow and Dröge, 1999; Swanson and Johnston, 1999).

The international research community on the human dimensions of global change includes natural and social science scholars with common interests, working in universities, research institutions or government laboratories. They communicate with each other at conferences or workshops, through scientific journals, and via the Internet. Major changes in academic development, as induced by global environmental research, include the growing volume of inter- and transdisciplinary research to address human and environmental problems, the commitment to public policy and management, and the rapid diffusion of information, via the electronic media, among the research community and other stakeholders. This new structuring and production of knowledge

is sometimes addressed and discussed as the "electronic invisible college" (Brunn and O'Lear, 1999). The members of the global change community have research interests in various overlapping areas within the human-environment interface: human ecology. They include cross-disciplinary clusters such as environmental and climate change, land use and resource management, integrative coastal zone management and eco-tourism, sustainable agriculture, environmental protection and food security. The electronic invisible college promotes virtual conferences on specialized topics of global change among leaders, students, and practitioners.

Scientific expertise provides important inputs into environmental policy, planning, and the decision-making process, from global level to local level. A major difficulty, apart from the implementation deficits which have been widely discussed by political scientists, may be termed here (adopting macro economics terminology) "the magic triangle of sustainability". Social (societal), environmental and economic sustainability represent conflicting goals that must be optimized. Optimization means not only a participatory bargaining process between the stakeholders involved; it also requires scientific information, hard or at least fuzzy data with respect to changes in ecological carrying or absorbing capacity for a given region, and resulting social and economic impacts. Sustainability is very often not accountable when it comes to concrete cases. We live in a state of uncertainty regarding scientific data. The ethical and political consequence will then be to act cautiously, in a value-conservative mode: If the precise limits to sustainability are unknown, it is imperative that we not bar the path to increasing or at least maintaining sustainability. Just such a "precautionary principle" has, to some extent, been adopted in environmental legislation. Its implementation depends on the HNR we as the 21st century GEC society wish to realize. Reviewing the politico-environmental agendas since Stockholm 1972, we may state cautiously that "ecological modernization", which applies high-tech efficiency and ecological taxes within a growing market, has won acceptance in many countries; whereas "ecological structural change", which builds on the social reorganization of society to achieve consumerist modesty and lifestyle self-limitation, is far from being a political option.

In summarizing and concluding let me raise a final question: Is all talk of "globalization" just a lot of "globaloney" as a number of journalists and critics seem to believe or are there substantive issues that must and can only be dealt with on a worldwide scale—globally; and, if so, what does "dealing with them globally" really mean (for Occident and Orient, North and South, women and men, rich and poor)? The

HNR has been a major theme in natural philosophy for centuries, if not millennia. The aspect of change was added more recently with respect to concepts of nature. The global environment was hardly a human concern before the 1970s—a decade that has witnessed the limits to growth discourse, the first UN Conference on the Human Environment, and two oil crises reminding the global society of the simple fact that global natural resources are finite. The *avantgarde* of the social sciences dealt with all of the above issues; by interpreting them as social constructs, to reveal some different perceptions. The scientific community realized that the search for GEC solutions needs inter- and transdisciplinary (including non-scientific stakeholder) synthesis and policy related cooperation (among others: Brewer, 1986; Ravetz, 1986; Committee on research opportunities, 1997).

Global change is reflected in regional and local development. Development and change in different parts of the world or in different segments of society create "winners" and "losers". Perceptions are usually considered to be a function of culture and development. The inverse tendency is also true: Perceptions such as "humans are the masters of the universe" (*dominium terrae*) or "exploitation of nature enables us to upheave the social order" (*dominium hominis*) induce or determine new developments. "Globaloney"? This is pretty serious business. Let us work together to turn "globaloney" into meaningful efforts to provide every "citizen of the globe" with prosperity, security, and a healthy environment in which to thrive. This is what is intended by globally sustainable politics, policies, and livelihoods.

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