

THE UNIVERSITY AND (SUSTAINABLE) HUMAN DEVELOPMENT

-- on (inter)disciplinarity, (un)sustainability, and human (in)security

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1. THEMES

The university and human development, the given topics, are not small themes. One can approach their interface from various sides. We can consider what human development thinking can contribute to the university. We could also ask what human development thinking, the contemporary work led by UNDP, Sen, Nussbaum and related groups, including the Human Development and Capability Association (HDCA), can gain from the tradition of thought about the university. There is much to consider in the latter area, for universities have always been concerned with human development in a deeper sense which the UNDP-HDCA work needs to understand better. I will say something about this. However, I will speak most about how universities could contribute to promote, support and defend sustainable human development. Promotion, support and defence require recognition that the systems we develop are fragile and that we need to consider risks and the people who are most exposed to them.

I would like to begin in Section 2 by clarifying the contemporary line of thinking that calls itself a human development approach, as represented by the UN Human Development Reports and the HDCA. We will relate it to wider and older lines of thinking about human development, and ask how the human development approach can be enriched by thinking more about the nature and experience of universities, given their role as vital agents of change or as brakes on change. Section 3 looks at how the human development approach can be applied to the work of universities. It draws in part on research done with Sandra Boni about applying a human development perspective for performance evaluation in and of universities. The second half of the paper brings together the two aspects—what can the university gain from human

development thinking, and what can human development thinking gain by reflecting on the university—to follow up the challenge of sustainability. Section 4 will argue that universities need to increase their commitment to interdisciplinarity, which must rest on serious attempts to understand disciplinarity, inter- and trans-disciplinarity. Section 5 suggests that the ‘human security’ wing of the Sen-UNDP human development approach can be helpful in extending an interdisciplinary understanding of environmental change, dangers and responses. Section 6 proposes that universities have a potential crucial role in the changes needed to redirect modern socio-economic development into a sustainable path – they can provide spaces for the required unconstrained reflection and cosmopolitan exchange and can help to form the next generation of change-agents. But to fulfil such a potential requires many changes, to counter the reduction of the university from a site of universal learning to a machinery for supporting profit generation and medium-term national self-interest.

Overall, I will suggest that the idea and ideal of ‘human’ concerns persons and their fulfilment, but is not just about fulfilment of whatever present day individuals presently happen to want. It is also about, using Socrates’ phrase, the considered life, good social relationships, and the human species including future generations; and it concerns human vulnerability not only human capability. Second, I will emphasise that the university needs to be a centre for interaction and independent thinking and learning, —about the material universe, the human universe, the intellectual universe. In a phrase from John Henry Newman and others in the 19th century, it is ‘the seat of universal learning’.¹ Universities are, potentially, vital intersection points in human systems: kitchens for new ideas, incubators for the leaders of the future and for the values of the future. This role is in practice not fully accepted by governments and businesses, not supported by many citizens, and often now declared to be an elitist imposition and usurpation of rightful authority. I suggest though that long-run human sustainability may depend on strengthening this role of universities as universal institutions: centres of holistic perspective and of universal sympathy, centres for personal growth of the future intellectual leaders, professionals, managers and active democrats of local, national and world society.

¹ The Wikipedia entry (<http://en.wikipedia.org/wiki/University>) cites Encyclopedia Britannica: ‘The word "university" is derived from the Latin *universitas magistrorum et scholarium*, which roughly means "community of teachers and scholars." ... The original Latin word "universitas" refers in general to "a number of persons associated into one body, a society, company, community, guild, corporation, etc.”’ In Britain and Ireland John Henry Newman led the trend which “transformed the inherited legalistic description of a university as a corporate body possessing endowments and privileges pertaining to learning into a thrilling emotion-laden, higher order conception of education” (Rothblatt 1997: 7). in doing this he was partly following in the footsteps of the earlier transformation of the universities in Germany, beginning at least two generations earlier, from 1806 on, led at first by J.G. Fichte and Wilhelm von Humboldt (Watson 2011, ch.10).

2. HUMAN DEVELOPMENT THINKING

'Human development' is a term used in various ways. It refers to, first, the developmental stages and processes of individual humans, as analysed in biology and psychology. Second, it can refer to the evolution also of the species, though this usage is less common. Third, growing out of the first meaning, the term can refer to 'human resource development' (HRD): a common usage in organization management and economic planning with regard to training and education. Fourth, as used in 'the human development approach' of UNDP and the HDCA, it refers instead to a human focus in socio-economic development, humanizing of the processes of social and economic change in localities, nations and the world (see e.g. Haq 1999; UNDP 2010; Gasper 2009a). This fourth meaning is sister to the terms human rights and human security, that similarly reflect attempts to humanize core concepts in the modern world (Jolly et al. 2009; Weiss et al. 2005). The human development approach should be seen as close partner to ideas of human rights and human security (Gasper 2007; Jolly et al. 2009).

What does the 'human development approach' add? In looking at processes and outcomes of social and economic change, it stresses:

1. *a plurality of values, not only the values of economic utility as expressed and promoted within markets;*
2. *secondly, a human-wide concern and solidarity, as in human rights philosophy: the field of reference is all humans, wheresoever in the world, and in particular all those affected by one's actions; and*
3. *thirdly, it recognises the normality and centrality of interconnections: side-effects of markets mean that market calculation is insufficient even if we only use a value of economic utility. (Boni and Gasper 2012: 457)*

The first and second aspects are relatively obvious. First, being human is about more than only those things valued by money, and money values are not ethically reliable measures for the importance of whatever they can and do put worth on. Second, our field of concern should extend beyond national boundaries—people must take responsibility for how their lives affect those of other people, wherever they are. This connects to the less obvious third aspect, the need to go beyond market calculations even if we only care about money values; for markets do not (and cannot) adequately include all important effects, including in relation to environmental and social sustainability. Not all things can or should be treated as commodities. Damage to ecosystems, the earth's regenerative cycles, damage to trust and mutual respect, society's connective tissues, damage to physical and mental health and to dignity, the foundations of persons' lives, should not be treated as part of the same monetized business calculus as used for commodities, nor should they be ignored.

Interconnectedness is in fact the rationale for the university: a place where all (or many) things are studied in one place, open to people from everywhere. For all things are interconnected, and multiple perspectives are both inevitable and needed. This insight

is incipient in the human development approach and explicit in much of the related work on human security (e.g., UNESCO 2008; Gasper 2010). Awareness of interconnections has underlain the creation of the United Nations and most of its work, as is well articulated by many interviewees in the UN Intellectual History Project:

'the basic premise of the [UN] charter, that you really can't have peace [between countries] unless the rights of nations great and small are equally respected. ... [and] the basic premise of the Declaration of Human Rights, that you can't have peace within a country unless the rights of all, great or small, are equally respected' (Virendra Dayal, quoted by Weiss et al. 2005: 151).

'...all the conflicts that [some rich governments] are giving rise to in an interdependent world precisely by ignoring the human rights and the democratic principles that they supposedly espouse' (Lourdes Arizpe, quoted by Weiss et al., 2005: 415).

Significant here is not only the fact of interconnection, but that the interconnections are beyond the capacity of any one or few persons or organizations or nations to be aware of and master, and must instead be responded to through formats that allow use of each person's knowledge. Ignoring this principle explains why sometimes the cleverest people make the worst mistakes in front of complex problems, problems that exceed any single person's capacities, since clever people are more likely to overestimate themselves and fail to consult and cooperate. One version of this insight comes from James Watson. Watson and Francis Crick identified the structure of life –the double-helix structure of DNA– at Cambridge University in 1953. Years later Watson reflected on why they won this scientific race. The reason, he said, was because they were *not* the cleverest in the race. As a result they did not rely on their own brilliance alone; instead they consulted others intensively. We can call this the Watson principle. By happy coincidence Watson is the name of Sherlock Holmes' less-than-brilliant companion, Dr. Watson, so the principle is easy to remember. The Watson principle applies also in public affairs and policy analysis. Amongst social sciences, economics may have made the worst mistakes. Neglecting its own principles of gains from trade, it for too long sought, mercantilist-style, only to export its products and to not import much. This danger helps to explain why the human development approach was formulated by heterodox development economists, in reaction against the narrow vision in the dominant orthodox development economics in the 1980s and 1990s, that was arrogantly imposed on dependent low-income countries.

So, beyond being only a theory about criteria of evaluation (the first aspect mentioned above)—even only an assertion of the overriding relevance of 'capability', the range of functionings that a person has reason to value and has real access to (Alkire 2005)—the human development approach contains several other, though related, dimensions. Its enriched perspective on persons, compared to that in utilitarianism and economic theory, is well articulated by, not least, Martha Nussbaum (e.g.: 1999, 2001) – a perspective that considers not only each person's ('human') potentials and capability, but also their ('social') affiliations and relatedness, and not only their capabilities but also their emotions and vulnerabilities. Its larger perspective on human living, compared

to that in orthodox economics, including about living in society, has implications for the design processes and contents of public policy (Dreze and Sen 1989; Gasper 2008).

Nussbaum (1997), Walker (2013) and others apply this awareness of a plurality of important values and this larger perspective on persons to the field of education, in order to transcend an HRD approach and to refine educational objectives, content, and style. In turn, the human development approach can be enriched by ideas from progressive education theory and practice. Beyond the insight that we only really learn when we teach, lies the sobering partner notion that, correspondingly, nobody truly learns what they are only taught. 'If you teach a man anything he will never learn it', warned George Bernard Shaw. Indeed, teachers can perhaps only teach the most important things indirectly:- curiosity; the fascinating nature of our world, and how it transcends our conventional notions; fun in exploration; commitment to a task and commitment to others; moral decency, and human dignity. Drawing on much educational theory, David Ellerman (2005) has articulated an approach to international cooperation that rejects the top-down arrogance that characterised mainstream development economics, and that respects human development principles and insights. The approach is relevant, we will see, to the types of inter-university cooperation that are centrally important in work towards human sustainability.

While past work on education and the university offers a rich resource for the contemporary human development approach, we should be aware of dangers seen in some of it. The Romantic German conception of human development, encapsulated by the concept of *Bildung*, was a great impetus to the emergence of the modern university. The term *Bildung* came to refer to 'the inner development of the individual, a process of fulfillment through education and knowledge, ...representing progress and refinement both in knowledge and in moral terms, an amalgam of wisdom and self-realization' (Watson 2011: 53-4). '...a man or woman of *Bildung* was not merely learned, but was also a person of good taste, who had an overall educated grasp of the world around him or her and was thus capable of "self-direction" that was at odds with the prevailing pressure for conformity' (Pinkard 2002: 7; cited by Watson 2011: 88). The process of inner personal development was illuminated by the *Bildungsroman*, the novel-form about the struggles and personal growth of a young protagonist such as Goethe's *Wilhelm Meister*. But two potentials in the German Romantic tradition were dangerous. One was a frequent turning away from social reform and engagement, when faced with a dominant reactionary state order. The second was a purely nationalist channelling of social concern. Herder had insisted on the dependence of identity, understanding and belonging on language (Watson 2011: 124-5), and this view could be used to encourage narrow nationalist commitments. We require an extension of a *Bildung* perspective about personal development, identity, understanding and belonging, now to a global scale that reflects the realities of our interconnections.

3. USING HUMAN DEVELOPMENT THINKING IN UNIVERSITY PLANNING AND EVALUATION

There is a strange and inexplicable reluctance by institutions of higher education across the entire globe to overtly promote the fact that they are, first and foremost, agencies of human and social development. (Bawden 2008: 65)

What are the implications of the human development approach for what we do in universities? Bawden remarks that university activities of teaching, research and external service, and university income and profits, should be seen as only intermediate means towards higher objectives of human development and societal development (Bawden 2008). What does this mean for orientation of universities' concrete activities, the teaching and research and societal outreach?

For education, various authors seek to derive more specific objectives from the higher order objectives; for example, 'preparation for participation in public reasoning; ... [and] preparation of emotionally enriched and matured persons, able to recognise, engage and take up responsibilities' (Boni and Gasper 2012: 458). These have implications for many aspects of university life, not only for teaching and formal coursework. And they take us beyond only 'know-what', 'know-how' and 'know-who' (Forester, 1999: 138)—the conventional knowledge, skills and network-building objectives of higher education—to encourage consideration also of 'which who?' and of 'know-why'.

At a more concrete level, many authors propose objectives of specified attitudes, values, commitments and skills to be promoted, as well as specified types of knowledge. Walker, for example, indicates how:

'In our application to professional education, Monica McLean and I (Walker and McLean, 2013) ... have therefore developed a list of eight professional capabilities extrapolated from empirical functionings which were seen to be of value to various stakeholders: Informed vision; Affiliation (solidarity); Resilience; Social and collective struggle; Emotional reflexivity; Integrity; Assurance and confidence; Knowledge and skills.' They consider these 'the core capabilities...for a graduate' in the contexts where they work (South Africa and Britain), in terms of an 'underlying human development oriented educational ideal...of public-good professionalism' (Walker 2013: 9-10).

Walker's Table 1 (p.12) goes further, and indicates the underlying broad values that imply these capabilities, the required features in teaching and pedagogy, and some more specific target functionings, such as 'A graduate who respects the natural environment and life'.

Sandra Boni and I have tried to extend this type of work in several ways (Boni/Gasper: 2009, 2011, 2012). First, we provide a more encompassing structure for such exercises, that covers each of the major aspects of university work and life:- 1. teaching and education; 2. research; 3. the university's wider societal engagement; 4. the university environment (a location where large numbers of people spend a large and/or formative

part of their lives); and 5. university governance, both in its processes and its products, including university policies and regulations such as policies on university investments.

Second, we indicate a systematic and not ad hoc structuring for identification of the types of objective. We distinguish four categories of objective, based on the main ideas in human development theory and the UNDP definition of human development:- (a) well-being objectives; (b) agency objectives, including regarding participation and empowerment; (c) social justice objectives, concerning just, equitable and respectful attainment of the well-being and agency objectives and their distribution; and (d) sustainability objectives, concerning the respect shown in all these dimensions for the interests of future generations. In effect, we use the human development approach to elaborate on the recognition in the 1998 World Declaration on Higher Education that 'Quality in higher education is a multi-dimensional concept'.

Thirdly, this systematic and comprehensive coverage of university activities and relevant criteria is intended to provide a framework for performance evaluation of and in universities in light of human development contributions, as shown in Annex 1. It proposes relevant evaluation criteria in twenty areas: for each of the four categories of objective in each of the five aspects of university life and work. We hope the framework stimulates preparation of operationalised context-specific alternatives and complements to existing university evaluation systems and ranking lists. Those systems serve partly different purposes than human development, notably objectives of national economic competitiveness and corporate (and university) growth and profitability, as parts of a global order which all major environmental reviews have warned is not sustainable (e.g.: MEA 2005; IPCC 2007; Rockstrom et al. 2009; UNEP 2007, 2012).

An attempt to systematically and comprehensively apply human development based objectives for universities will face powerful opposition, not only organisational inertia, just as corporate social responsibility has been resisted or often only adopted as charade, lip-service, or 'greenwashing'. The linking of university work to human development needs to be institutionalised in procedures and systems for evaluation of individual and organisational performance; hence the managerial format in which we present the framework (Annex 1). But in addition the work needs to be grounded in an understanding of what is at stake in terms of social philosophy, going beyond just 'the idea of a university', to a theory of the rationale of a university and of its contributions in relation to the requirements of human sustainability. So, lastly our work explored the underlying issues of social and political philosophy.

To present seriously in education objectives that concern social values and commitments, not only knowledge and technical skills, and also skills for participation in public reasoning, implicitly queries some widespread tacit presumptions:- that markets justly and fully effectively allocate resources, so that no further thought in society is required; and/or that power holders in general will justly and fully effectively allocate resources and do not require disciplining by institutionalised principles and democratic

mobilization; and that therefore universities should merely follow the instructions implied by market signals or conveyed by government instructions. The university has a vital role as a space for collective learning processes of wider exploration, reflection, critique, and experimentation: as a necessary independent 'estate', arena, actor and facilitator in these processes; and potentially as a promotor of democracy and inclusion. None of this is automatic; the university can instead reinforce systems of inequality and exclusion.² For some holders of market and/or state power these claims and critiques are offensive and will be rejected and reacted against. For them, universities should indeed be entirely guided by values of the nation-state and the market. Human fulfilment may be held to centre on the acquisition and consumption of commodities, and markets considered to never fundamentally undermine the operation of their environments. In the associated reductionist conception of universities (DEA/AUT 1999), universities should provide only training considered relevant by existing employers within a country and carry out only commissioned research for powers-that-be. The crisis of sustainability which we have entered, amongst other issues, suggests the fallacy of all these presumptions.

[the contemporary] material approach to development now poses threats to the very sustainability of life on earth itself... many of the problematic issues that we currently face in the world 'result from techno-economic development itself'...[with] 'bads' emerging as unintended consequences of the production and transmission of 'goods' (Beck, 1992) [Bawden 2008: 67].

Unfortunately, at the same time as this emergence of a global risk society, epitomized by the problem of climate change, the intellectual, political and spiritual autonomy of the university has declined, argues Bawden, when it is most needed.

Modern economic and political systems have built the further presumption that never-ending economic expansion is desirable, feasible, and indeed essential for political and social peace. In the face of massive evidence from the environmental sciences that unending economic growth is not feasible, the term 'sustainable development' has been a seductive obfuscation that makes play of the ambiguity of 'development', which can mean either an achieved state or an ongoing process. While environmentalists meant an achieved, sustainable steady-state, for industrialists, government and most economists 'sustainable development' has been a euphemism for unending economic growth.

² Imanol Ordorika (2008: 17-18), professor of education at the National Autonomous University of Mexico (UNAM), argues for the following ambitious set of social responsibilities of universities: '1. To provide a privileged space for relating global trends to national societies... 2. To act as the only public institution that promotes reflective understanding and grounded critique of contemporary society and its relations with the environment... 3. To bridge the gap between specialized knowledge and society as a whole... 4. To act as the main institution in re-creating and constructing contemporary shared values and societal understanding, and serve as an essential space for shaping diverse constituencies for a broad set of interactions within society and with the environment... 5. To act as a fundamental establishment for the production of knowledge...including but moving beyond the narrow reach of production requirements and market demands.'

Social sciences need to explore alternative arrangements for peace, and social sciences and philosophy have to examine the claim of desirability of endless growth of monetized economic activity, and to support alternative paths to human dignity and fulfilment. The work that led to the Earth Charter and The Great Transition Initiative identifies three major required changes in perception, for humankind to respond to the emerging crises and move to a sustainable path:

- A From consumerism, and an ideology of life-fulfilment through buying, to a focus instead on quality of living;
- B From individualism to human solidarity; including concern for the 'external effects' one imposes on others – both living and yet to be born;³
- C From domination of nature to ecological sensitivity. (Raskin 2006a).

Annex 1 correspondingly includes attention to diverse aspects of well-being and indicates that the fourth family of criteria for university performance evaluation, sustainability objectives, has a temporal, a spatial, and a disciplinary dimension:- strengthening of long-term perspective; strengthening of global perspective; and strengthening of holistic perspective, inter- and trans-disciplinarity. Let us look in particular at this last dimension.⁴ Later we touch on the other two also. The adoption of a global and long-term perspective, and every potential contribution of universities, depend on awareness of the limits of conventional disciplinary formats in university work and on efforts to loosen them and strengthen supplements and alternatives.

4. CHALLENGES OF UNIVERSITY DISCIPLINARITY IN RELATION TO ENVIRONMENTAL SUSTAINABILITY

There are many good reasons for a discipline-based organization of work in universities, in both training and research. An in-depth rather than in-breadth approach, one that leaves out many aspects, allows one to concentrate in a sustained way on a manageable number of aspects; inculcation of this in-depth approach to new entrants to a scientific area reduces the translation and transaction costs in communication; and discipline-based organization also helps to define, declare and defend recognised scientific zones, each with recognised scientific achievements attained through in-depth specialisation, that can thereby reasonably claim that they must be managed by scientists according to scientific criteria and not by politicians, administrators and ideologues. The hierarchy of scientific authority within a field gives some structure for this management and for - allocation of budgets. The provision of organized training for young entrants in the field gives a viable resource basis for its other activities, and a home for older members. Both young and old are offered an affiliation, an identity, that fits the human proclivity to belong to groups.

³ Recognition of this emerges at the margins in the work even of leading mainstream economists like Stern (2010) and Stiglitz (2007); see Gasper (2013) for an analysis.

⁴ For discussions of the temporal and spatial dimensions of awareness and commitment, see Nussbaum (1997), Raskin et al. (2002), Kates et al. (2006), Gasper and George (2010).

Disciplines function as culture areas not only knowledge areas (Gasper 2004, 2010b, 2012). They form separated relatively secluded zones in which intensive, disciplined, disciplining socialization occurs, as in an army or a religious order. They have their own 'languages', including their own habitual metaphors, forms of humour, and styles of writing, and their own approved histories with their own characteristic symbols and tales of great men and great victories. They become bases of noun-specified identity: 'I am a geographer', 'speaking as an economist'. As part of intra-group bonding, groups tend to define themselves in contradistinction to other (perceived) groups. Close knowledge of other areas is sometimes treated as showing lack of faith in and loyalty to one's own area. This problem is more intense amongst the social sciences, since they are to some extent rivals that offer partly competing explanations; but it applies to some degree even between natural sciences, found Becher and Trowler (2001).

'Disciplines' (disciplinary communities) are thus the typical units of academic organization, especially for most teaching; and are homes of personal identity for the disciples and indeed also for the leaders (Becher and Trowler 2001). 'Specialisms' (specialist networks) are the typical units of live ongoing research. They usually overlap, in patterns of imbrication like overlapping roof tiles. Disciplinary work generates ongoing specialization which allows deep concentration in a research area but leaves gaps and leads to eventual diminishing returns. This creates incentives for creative new combinations at the intersections of existing specializations, a process of cross-border hybridization (the cycle of: specialization → hybridization → a new area of specialization) described in Dogan and Pahre's *Creative Marginality* (1990). New specialisms often appear, so that research becomes less rather than more unified, whereas the organization of teaching is relatively stable. This hybridization is one form of inter-disciplinarity, and is essential to the long-run continued viability of the disciplinary area. Dogan and Pahre suggest that it shows both that interdisciplinary work often depends on having strong disciplines, and that keeping disciplines strong typically depends on interdisciplinary work.

The reason for interdisciplinarity is that each discipline gives a way of seeing with a single lens, from a single viewpoint. Each omits other types of information and other perspectives, and processes limited information in a particular systematic but again limited way. Lenses for viewing are unavoidable, but there are many types and we must be self-conscious and skilful about their use and how to work with people who use other lenses. In description and explanation we often require a broader view on a world that is too complex and interconnected to be adequately captured by single disciplines; to study the particularity of specific cases, situations and histories we require multiple lenses and viewpoints.

Similarly, in policy-preparation, we need to adequately study situation-specifics and consider many relevant dimensions, not only those that are conveniently handled by a particular academic discipline. Indeed: 'The complexity of policy cases frequently

exceeds the grasp of discipline-based knowledge, even when brought together from different disciplines' (Gasper 2010b: 53). This complexity calls for not only multi- or inter-disciplinarity but for structures of wider social learning, beyond the confines of disciplines, and thus for transdisciplinarity. Even in many simple daily cases, wide consultation is essential. Andreas Faludi (1978) provides an instructive example, from a routine planning problem in Austria in the 1960s. Congestion on a road through a mountain town had become severe, as road traffic grew, both through-traffic and local-traffic. The historic old town in a salt-mining area lay between a mountain and a lake, and the road passed through the town itself. Faced with increasing damage and delays, those responsible for physical planning of the town prepared a plan for an upgraded road to handle the greatly increased through-traffic. To avoid the town centre and the mountain, it would 'have to' go along the lakeside and destroy historic houses which were part of the town's identity and attraction. The planners knew that this would arouse local opposition and mobilization. They considered that a formal public debate would be politically unavoidable but tiresome, for in their eyes there was no alternative to such a road and the public inquiry would thus be merely an unfortunate delay. Yet during the public debate, new information surfaced from unexpected sources. The director of the local museum, familiar with local history, reported that the present lakeside had been created by landslides in the 18th century: it was not as solid as the planners had assumed. The owners of the salt mine in the mountain reported that the mountain could be tunnelled through, and in further debate it emerged that a double-tunnel design newly devised in Switzerland meant that the problem of build-up of toxic fumes in a long tunnel was solvable. Separate tunnels for each direction of traffic allowed fumes to be driven out by the unidirectional traffic. Contrary to the planners' expectations an alternative did exist, indeed one that public decision-making concluded was superior and that was adopted. Identification of the alternative emerged through the involvement of participants remote from 'normal' processes of town planning: a mining company and a local historian. In other words the multiplicity of stakeholders was an asset and not (only) a difficulty. To access that relevant knowledge required structures for learning and co-operation. Faludi remarks how this applied even in a fairly small and routine case.

Brauch specifies some of the interconnections between economic and social development, natural environments, and peace and security which necessitate inter- and trans-disciplinary work (see e.g. Brauch 2008a, 2008b). Yet at the same time as such interconnections have grown, 'The whole system has pushed, pushed, in educational terms, towards specialization, when the reality of the world has been pushing more and more towards integration' (Juan Somavia, quoted on p.429 of Weiss et al. 2005). Extreme intellectual specialisation can produce some powerful knowledge, but knowledge that is also dangerously narrow when used as the basis for action. It leads typically to unforeseen effects, observe Zygmunt Bauman and Ulrich Beck, including unforeseen 'bads' that accompany the foreseen 'goods'. In a highly interconnected global system with powerful drivers of change based on this narrow knowledge, 'the line

beyond which the risks become totally unmanageable and damages irreparable may be crossed at any moment' (Bauman 1994: 29).

For understanding and responding to environmental change in particular, we need intellectual pluralism. '[S]ome problems cannot be properly treated by merely adding up models that arise from separate disciplines' (Kline 1995: 263); we must study the overall structure of the problem, that links the sub-problems studied by the disciplines, and recognise that human systems retain degrees of freedom – they are constrained by but not determined by their enviroing systems. 'The numerical values produced by the index of complexity for various classes of systems tells us we have often seriously underestimated the complexity of social and sociotechnical systems in comparison with systems of inert, naturally-occurring objects' (Kline 1995: 278); but the human mind seeks explanations and too quickly transfers models from less-complex systems, even to systems where it cannot even list all the relevant variables and parameters.

Norgaard stresses that we should drop monism, the premise that there is only one correct way to understand a system. Full coherence in the understanding of issues like climate change is 'inherently impossible for the knowledges of the scientists from separate disciplines cover different variables, different spatial scales, and different time scales. And multiple incongruent patterns of thinking are being used', such as the mechanical models of physical scientists versus the evolutionary models of biologists (Norgaard 1994: 140). In Martinez-Alier (1999)'s terms, drawn from Otto Neurath, we can essay 'orchestration of the sciences', bringing them together and interrelating them, without expecting to absorb them all into one discipline (old or new). Interconnection of the multiple partial, limited perspectives should be through a democratic multi-cultural politics of science, such as essayed perhaps by the IPCC: '...knowing must be a social process whenever separate disciplinary understandings must be merged... [for] the patterns of thinking really are incommensurable...' (Norgaard 1994: 147-8).

Given that disciplines are both deeply ingrained intellectual formations and also homes of identity, bastions of tradition, and bases of control over finance and personnel, learning from the decades of often difficult experience with the processes and structures for inter- and trans-disciplinary work is essential. Table 1 summarises some suggestions from the literature (e.g.: Klein 1996; Gasper 2004; Frodeman et al. 2010). First, mental readiness and realistic expectations are essential. Much can be learned from the field of negotiation and mediation that can help in interdisciplinary research and teaching. In writing on 'Dealing with Differences', Forester (1999, 2009) notes the importance of 'diplomatic recognition' and of acknowledgement that one's rivals have thought seriously and intelligently about their fields and their approaches, that one must learn why they think the way they do, and that their perspective and contribution is valuable. Building deliberative working relationships leads often to identification of unforeseen opportunities and complementarities, as hinted at for example by Faludi's mountain road example. However, communication alone does not suffice for cooperation. Krohn (2010) stresses how these are different things. Interdisciplinary

communication can be considered successful even if scholars irritate each other, for this is a sign of mutual cognisance and might stimulate new ideas. Besides irritation, interdisciplinary discussion readily leads to mutual theft of intellectual properties, he adds, which often leads to bastardization of the ideas in their new home. All this is not the same as serious interdisciplinary cooperation, which requires an agreed division of labour and ‘tools’ to organise and facilitate the cooperation. They include intellectual tools — cognitive ‘boundary objects’ that are accessible to each of the cooperators despite their different backgrounds; shared frameworks; metaphors that help people to grapple with the unfamiliar and complex in terms of the familiar and relatively simple (Kovecses 2007; Gibbs ed. 2008) — and human brokers who facilitate the interchange across boundaries. In the following section I present human security analysis, an offshoot of the human development approach, as one helpful potentially shared framework for inter- and trans-disciplinary work on sustainability.

Table 1: Requirements for effective inter- and trans-disciplinary work

<i>Mental readiness</i>	
1. Psychological security	Individual inquirers who do not need to hide/define themselves as tribe-X/caste-Y/‘Jesuits’/physicists
2. Mutual respect	Empathy. Methods for ‘Dealing with Differences’.
3. Realistic expectations	Communication suffices for mutual irritation and mutual theft, both of which can be productive. Cooperation requires far more than merely communication, including various tools mentioned below.
<i>Tools, ‘Bridging capital’</i>	To counter-balance intra-group ‘bonding capital’; including by the following types of ‘bridging capital’ that help inter-group links :
1. Networks	Inter-organisational linkages, meeting places, members, patterns of informal contact
2. Recognition for Link Roles	People (and organisations) who specialise as bridgers and synthesisers; and as methodologists and theorists of interdisciplinarity; including by investment in work on inter-disciplinary methodology - to be explored in joint seminars
3. Helpful Metaphor(s)	E.g.: scientific work seen as a complex eco-system, with many diverse life-forms, niches, feeding chains, and trends, etc., and many diverse types of connection between life-forms
4. Shared Frameworks	Need for shared discourses:- mutually accessible and acceptable intellectual frameworks.
5. Cognitive Boundary Objects	Ideas/examples/problems that serve as shared foci/interests across disciplinary/specialization boundaries

5. THE HUMAN SECURITY ELABORATION OF HUMAN DEVELOPMENT THINKING: a transdisciplinary bridge-framework for studying human ecology

A human security approach looks at the diverse, situation-specific sets of interacting threats that can affect the lives of particular groups and types of people, even particular individuals, especially the lives of the most vulnerable. Such analysis makes one more aware of “the dynamic interactions between processes, responses, and outcomes [and can generate] new insights and research questions beyond those associated with separate framings and discourses” (Leichenko & O’Brien, 2008: 33). We come to see connections and possibilities that can get screened out by conventional mental frames, routines and authority structures.

When Hurricane Katrina struck New Orleans, a large majority of the victims of the storm and the subsequent flood were from the following three groups and especially from those people who belonged to all three: Afro-Americans; poorer people, since they lived on the worse land; and people over sixty. Leichenko & O’Brien (2008) show how, if we focus on the situation of particular people in their particular social and physical locations, we become aware that the groups who are most threatened by global environmental changes are often the groups who are most threatened by global economic changes. They are more exposed to shocks, for example because their jobs are less secure and also less safe, and they live in more physically exposed locations; they are more damaged by a given exposure and by their actual greater exposure, since they have less resources for protection; and they are the least resilient in recovering from the shocks, because again they have the least economic, social, cultural and political resources. In New Orleans old industries had declined and laid-off employees, whereas new channels had been cut from the Mississippi river to the sea and provided paths along which storm surges from the Gulf of Mexico could reach the city and hit the low-lying weakly protected low-income residential areas inhabited often by elderly people who lacked private transportation and depended on public services that had been reduced during economic restructuring and then collapsed during the crisis.

By looking at particular people in their particular locations, we learn that economic globalization and global environmental change have additive and interactive effects and trigger further rounds of impacts. Awareness of these trans-disciplinary interconnections makes us more aware of vulnerabilities and leads us to adopt a wider scope of attention to contributory factors (Leichenko & O’Brien 2008; Matthew et al. 2010). We miss this if we work in an abstracted disciplinary discourse. So, for example, the Stern Report on Economics of Climate Change (Stern 2007) had separate chapters on economic costs of climate change in rich countries and in poor countries, each based on an accumulation across different sectors of quantitative projections concerning impacts. It underweighted, first, the non-quantified effects such as political instability; second, the interactions between sectors, such as the wider effects of political instability, especially when that exceeds routine minor variation; and third, the cross-over impacts on rich countries from instability in poor countries, especially when

outside the range that can be projected by quantitative analysis of past variation (Gasper 2013). In contrast, 'The Great Transition Initiative' (GTI) identifies three critical areas of risk that pose fundamental uncertainties for human society (Raskin et al. 2002; Raskin 2006a): 1. environmental risks; 2. the economic instabilities of (to use Edward Luttwak's term) 'turbo-capitalism'; and 3. socio-political combustibility, and traces their interconnections which imply the danger of destructive chain reactions (Raskin 2006b).

The great range of factors involved in environmental and social change and their complex interconnections lead us towards an awareness of uncertainty and contingency, and towards a scenarios approach. Scenarios and stories can show local specifics and so bring better appreciation of local dynamics; they can respect all important interactions, not only the ones we can model; and they can make us more aware of low-probability conjunctures that could however have very high impact. Scenarios and stories also show emotions as well as calculations, and are thus potentially more realistic; and further they evoke emotions and may increase sensitivity to the realities of other people's lives. They can contribute to forms of 'diplomatic recognition'.

Besides helping us to more adequate description and explanation, the transdisciplinary character of human security analysis can thus contribute also to better empathic understanding. Overall, it may promote two qualities needed for respecting the natural environment and social fabric and for preserving and promoting 'global public goods': a perception of intensively interconnected global systems, and an ability to think and feel what would it be like to live the life of particular other persons (Gasper 2013).

6. POTENTIAL ROLES OF THE UNIVERSITY IN RELATION TO HUMAN SUSTAINABILITY

Remarkably, the index of the 700-plus pages *Oxford Handbook of Climate Change and Society* (Dryzek et al. 2011) contains no entry for 'university'. Has the disciplined commercialized modern university lost any special significance in relation to sustainable human development? Has what once aspired to be a key intellectual meeting place and font of societal innovation withered to an irrelevance, or is its performance in respect of climate change optimal and thus requiring no further comment? Does it present no obstacles and no major unfulfilled potentials?

Sadly, some of what goes on in the contemporary European (or North American) university seems historically unaware, intellectually narrow, fashion-driven, and marked by a self-idealizing European-ness that seeks to justify invidious distinctions and lifeboat thinking. Further, many sources of creative and inspirational thinking do lie outside the university. But the university has several essential potential roles in relation to the requirements for orienting modern societies towards sustainability:

- Preparing crucial agents of social change: elite young professionals, intellectuals and future leaders

- Providing a space for creative thinking not controlled by existing powers-that-be
- Offering a cosmopolitan space, a space for universal learning and universal sympathy, that broadens minds and hearts
- Adding rigorous thinking that mobilizes historical traditions of awareness and understanding and transcends mere fashions.

Preparing change-agents

The Great Transition Initiative (GTI) work uses a simple but plausible stimulus-and-response model of possible global futures:- destructive chain reactions can lead to crises, which constitute the stimuli; while the responses in these eventual phases of opportunity depend on the capacity of leaders, citizens and organizational and inter-organizational systems. Judging from the record of near-inertia on many fronts during the past two generations despite the forewarnings of possible emergent interrelated global environmental-economic-political crises, global coping capacity is very limited. It will only greatly increase, argued the GTI, if a powerful global citizens movement (or 'movement of movements') emerges, that drives leaders and organizations to respond and to innovate new systems. Further, rather than movements of angry nationalisms or nostalgic fundamentalisms, a favourable transition requires a movement ('of movements') that has sufficient shared vision around a shared identity of global citizen (Raskin 2006b). The likely key actors for such a global citizens movement, having the necessary energy, idealism and dissatisfaction are: young people (Raskin et al. 2002). Universities remain vital, as venues where young people not only exchange ideas but are (potentially) exposed to different idea-systems, imbibe larger visions, and experience the time, the ambiance and the expectation to think, criticise, self-criticise and mutually criticise, grow, and contribute to change.

Necessary sites for creative reflection

Universities are pivotal in structured processes of social learning that are both creative *and* intellectually rigorous (Bawden 2008). A particular opportunity and challenge for universities, given their degree of distance from businesses focused on this year's profits and from governments focused on next year's election, is to contribute in rethinking of the sources of well-being, and to help in translation of the ideas into practical life styles, planning frameworks, evaluation formats, education programmes and the like (White 2009, 2010; Gasper 2009b, 2013a). We saw that The Great Transition work indicated three required changes of predominant perception, in order to move to a sustainable global society: 1. from consumerism and an ideology of life-fulfilment through buying, to a focus instead on quality of living; 2. from individualism to human solidarity; including concern for the 'external effects' one imposes on others; and 3. from domination of nature to ecological sensitivity. Interestingly, values surveys around the world show already much stated support for values of solidarity and ecological sustainability, though behaviour does not yet match the statements. But the bigger challenge concerns the first area, the conception of sources of well-being and quality of life, where stated values are still heavily focused on ever-growing commodity acquisition (Kates et al.

2006). Here part of the responsibility for articulation, advocacy and application of other values rests upon universities.

Necessary cosmopolitan venues

Universities are inherently partly cosmopolitan, via the nature of knowledge and of processes of knowledge generation, diffusion and use. They are 'located in a space that is neither global nor national, but the interaction of both', and part of their contemporary role is 'to give expression to an alternative to global corporate culture...and represent an alternative to market rationality' (Delanty 2008: 30). Arguably, only universities can function adequately as the required venues for sustainability thinking because they provide the required interfaces between multiple areas of knowledge, multiple social actors and their claims, and different countries, in a context that is not dominated by state authority and market biases.

'The university no longer has a monopoly over knowledge in the broad sense of education, nor does it exclusively define science. Yet it is a vital institution in the public sphere that contributes to civil society and citizenship by connecting societal discourses. ... the university today should become the cosmopolitan site of global public culture that brings together different kinds of knowledge and cultures ... to connect different kinds of knowledge' (Delanty 2008: 31).

One of the richest potential areas for Northern universities to contribute to change is by building rich, mind-broadening collaborations with Southern universities, involving longterm exchanges of staff and of students and sustained two-way joint research. Such cooperation should keep in mind both the Shaw principle, that 'If you teach a man anything he will never learn it', and the Watson principle: 'Consult widely and intensively'. Fortunately, working towards sustainable human development can thereby be a delight.

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ANNEX: Matrix of Human Development criteria corresponding to core University activities

Based on: Boni and Gasper (2009, 2011, 2012)

University activities HD Values	Teaching	Research	Social engagement	Governance/university policies	University environment
<p>Well being (includes autonomy, critical thinking; reflexivity, emotions, feelings, spirituality, self-esteem, initiative, creativity, physical fitness, etc.)</p>	<p>Critical thinking methodologies Reflexive practices</p> <p>Open curriculum (majors & minors system, allowing students to create their own knowledge fields, etc.)</p>	<p>Research that questions theoretical frameworks, and is oriented to themes of human well-being, globally and locally</p> <p>New opportunities for research in terms of grants, programs</p>	<p>Public access to university facilities (libraries, university buildings)</p> <p>Adult learning facilities</p>	<p>Good policy on salaries and promotions for staff and faculty</p> <p>Well-being programs</p> <p>Good policy of financial support to undergraduate and postgraduate students</p>	<p>Places to relax (inside and outside buildings)</p> <p>Sport facilities</p> <p>Spaces for peaceful reflection</p> <p>Enough light / air in buildings</p> <p>Open spaces</p>
<p>Participation and empowerment (includes agency, social transformation)</p>	<p>Participation in the curriculum design of degrees and courses (by faculty and students), and course evaluations (by students)</p> <p>Participatory learning methodologies</p> <p>Relate contents to reality</p>	<p>Co-creation of knowledge</p> <p>Co-decision in the research themes</p> <p>Participatory budgeting for research priorities</p> <p>Participatory research</p>	<p>Academia/Civil Society networks</p> <p>Student engagement (voluntary work; collaborative projects)</p> <p>Faculty engagement (research centers in collaboration with communities; staff with social engagement as a part of their work; public engagement events)</p>	<p>Participation in the definition of university mission, strategic plans, elections, boards of governance that include internal and external actors.</p> <p>Incentives for students and staff for community engagement</p> <p>Promotion policies that reward social engagement</p> <p>Time preserved for cultural and social activities</p> <p>Public debates</p>	<p>Associative life within the university, particularly social and political</p> <p>Open space in classrooms to allow movement</p>

	Teaching	Research	Social engagement	Governance/university policies	University environment
<p>Equity (social justice) and respect for diversity (learning between different cultures and identities)</p>	<p>Ethics education</p> <p>Part-time and virtual courses</p> <p>Cultural and multicultural presence in curriculum</p>	<p>Benefits of research to society</p> <p>Contextual and cultural responsiveness of research themes</p> <p>Funds for research themes with low economic profits</p>	<p>Technology transfer</p> <p>Contributions to local economy and social cohesion (jobs created among excluded sectors; economic activities; business advisory services)</p> <p>Prizes</p> <p>University activities to support local cultures and languages</p> <p>Activities given to community organizations</p>	<p>Equitable policies for recruitment</p> <p>Equitable access to university for minority and excluded groups (financial assistance, etc)</p> <p>Excluded groups representation</p> <p>Attention to local languages</p> <p>Budget allocation for human development activities</p> <p>Access for students with disabilities, pregnant students, students with children.</p> <p>Mechanisms of accountability</p>	<p>Wide access to University services</p> <p>Opportunities for staff and students to be engaged in community activities</p>
<p>Sustainability (long term perspective; global perspective; and holistic perspective, interdisciplinarity)</p>	<p>Global issues in the curriculum (ethics, environment, peace studies, sustainability). Interdisciplinary approaches in teaching. North/South networks and programs</p>	<p>Research themes relevant for global issues</p> <p>North-South networks</p> <p>Interdisciplinary research</p>	<p>International links</p> <p>International Cooperation programs</p>	<p>Corporate social responsibility shown in the university's investments and other practices</p> <p>Environmental policies</p> <p>International development cooperation programs and budget allocation</p>	<p>Opportunities for staff and students to be engaged in international activities</p> <p>Environmentally friendly practices</p> <p>Green spaces</p>