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Building bridges and nurturing a complex ecology of ideas

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INTERDISCIPLINARITY

- Building bridges, and nurturing a complex ecology of ideas

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Abstract: Much discussion of interdisciplinarity shows one or more of the following defects: 1. conceptual confusion - lack of a refined and consistent set of terms for analysing interdisciplinarity and its variants; 2. utopianism - lack of realism about constraints and possibilities in the social organization of science; 3. monism - advocacy of a single simple organizational model, rather than a complex heterogeneous model with multiple niches, nodes and forms of interaction. The paper offers a more refined, realistic, and pluralistic theory of interdisciplinarity. It makes special reference to development studies, whose typical combination of a case-focus and a concern for policy relevance guides it strongly to interdisciplinarity; and to problems raised by the dominant economics conception of itself as a self-sufficient alpha-status discipline. Beyond conceptualization (of a wide range of types of interdisciplinarity) and diagnosis, the paper considers the potential of a number of approaches that claim to offer 'bridging capital' - paths to effective interdisciplinary social analysis - including social capital theory and entitlements analysis amongst others.

[ID = inter-disciplinarity *or* interdisciplinary, depending on the context. MD = multi-*.]

1. INTRODUCTION

Imagine a man who endlessly extols the virtues and superiority of the knife, another who exclusively serenades the spoon, and a third who swears only by the fork. How comic! The intelligent eater learns to use and appreciate all of these--and chopsticks, bare fingers, chapatis/tortillas and other such gathering aids, implements for fine slicing and grating, and much else, whether employed directly or sometimes by others more expert--according to the situation; sometimes singly, sometimes in combination. The intelligent social analyst similarly needs to draw on multiple perspectives and tools, selecting and combining according to the case and the purpose.

The need to avoid a fixed, let alone a single, disciplinary frame for conceiving and considering situations acquires special importance in development studies. We will elaborate on reasons later, but can note here the call to deal with cases in their own right, their own complexity, not by imposition of simplified universal models from a metropolis. (See for example Wuyts, 1996, on the crudity of the IMF's standard model of macroeconomic balance and its misfit to Mozambique.) Development studies has used interdisciplinarity as legitimation for its distinctive organizational space.

After a generation, or now even two, the question is asked: has the legitimacy been sustained, does the organizational space deliver? Speaking of one of the first development studies institutes, van Nieuwenhuijze recalled that 'In starting the Institute of Social Studies [in The Hague in 1952] it seemed feasible to build an organization that offered the least impediments to budding interdisciplinarity. To create the opportunity for a venture into interdisciplinarity, a price had to be paid, namely, marginality vis-a-vis the universities' (1979:58). Reviewing the institute's first 25 years he judged that: 'The various disciplines have shown little interaction. Economists have by and large "done their thing"..' (1979:59). Aware of arguments (such as we will see later from Hettne) for development studies, a field with a global interdisciplinary perspective, as providing a window on the emergent One World, he warned that such claims will 'be held to ridicule unless the marginality proves effectively innovative' (p.62).

Interdisciplinarity (ID) is not a Holy Grail and not an end in itself. It must be judged by its fruits. From general social science literature there is indeed evidence of the greater fruitfulness of 'cross-border research', work at an intersection of perspectives (see e.g. Gerstein et al, 1988). This is fruitfulness as judged by long-run influence and use, not only by number of publicatins. In partial contrast, a leading development economist and China specialist, Dwight Perkins, former head of the Harvard Institute for International Development, warns that: 'There is a long, long history of the failure of multi-disciplinary work' (Perkins, 1990; cited by Norbye, *Forum for Development Studies*, 1992(1):154). He suggests that multi-disciplinarity (MD) is required for many policy problems, but may not fit theory building. MD means use of more than one discipline; ID means interaction and influence between them. Both are in low repute amongst many economists. Yet for various subject areas, the environment-and-development field for example, the deeper

insights and greater adequacy of multi- and inter-disciplinary work seem glaring, to those with the commitment and skills to read it.

In this paper I look at rationales, problems, and options in interdisciplinarity. I argue that, moving beyond a vision of science as constituted very largely by almost exclusive disciplines, we should recognise and promote a complex intellectual 'ecosystem', with multiple legitimate types of role, niche and activity (Sections 2 and 3).

To understand the prospects and roles and forms of ID, we need to understand disciplinarity (D), as discussed in Section 3. More broadly, we need a theory of scientific production to help guide our own choices as scientists, and a theory of knowledge use to guide the attempt to link research to potential users, including in other disciplines. While some organizational changes can help--for example recognition of broker and liaison roles, in decisions on appointments, training and funding--such organizational recommendations must be grounded in and guided by a deeper understanding of the nature of D and ID. Influenced by the framework used by Shadish et al. (1991) for analysing approaches in program evaluation, I will highlight the following dimensions in the design and pursuit of ID studies:

Background Proto-Theory of Society (and Environment): including societal (and environmental) ontology, and theory of the person; in other words, what are basic features of our subject matter which then determine how we can study it effectively. For example, are there separable 'social', 'political', 'economic', and 'physical' aspects? Issues of this type will be touched on especially in Sections 2 and 4, including with reference to the special claims and challenges of development studies and economics.

Theory of Scientific Organization, of Disciplinarity and Interdisciplinarity: how does and can science get done, as a social, psychological, organizational enterprise? Scientists need and use some theory of themselves, implicit or explicit, in order to pursue their work. We will look at selected issues relevant to interdisciplinarity, in Section 3 on the nature of disciplines and requirements, constraints and possibilities implied for ID, and in Section 5 on types of ID and types of 'bridging capital', intellectual frameworks that seek to promote interaction and mutual deepening. Section 2 begins with the need to recognize and theorize at least three modes of social research: (i) traditional disciplinary research led by methods and theory; (ii) case-oriented research, led by pressure to understand a real-world situation, not only selected aspects; and (iii) policy/practical-problem oriented research, led by pressure to respond to a perceived life problem (Johnson, 1986).

The paper will not pursue other relevant dimensions: *Theory Of Knowledge Generation and Validation*, where there may be major questions specific to ID research, such as how to marry conflicting disciplinary standards of validity; *Theory of Research Practice,* on the detailed issues of organization and conduct of research - for example in team research the choices of team leader and structure, team preparation, styles and contents of meetings and writing and interaction with intended users (see e.g. Luszks, 1958; Berge & Powell, 1997); and *Theory of Knowledge Use*, on what determines the degree of influence, if any,

of research on policy and action (see e.g. Wagner et al., 1991; Jasanoff & Wynne, 1998), though I take from there the ideas of 'bridge' and 'broker'.

As an example of such analysis of assumptions about the structuring of scientific work and the shape of its subject-matter, Section 4 considers mainstream economics. This demands attention because of special problems with its engagement in--or often resistance to--interdisciplinarity; for example, it hides its strong in-built values and has often been heavily self-absorbed and self-congratulatory.

We need better language for recognizing and describing the intellectual eco-system: for clear cumulative communication and because making distinctions forces greater clarity on issues. I will consider possible vocabulary and imagery for discussing and facilitating types of ID, especially in Section 5. One old and still useful image is 'building and using bridges', which draws on 'the island metaphor' noted by Berge & Powell (1997), a more optimistic one than the 'cactus metaphor' for disciplines. They commend too the image of 'the evolutionary tree'. I favour the image of nurturing a complex ecology of ideas. *Inter*-disciplinarity concerns the relations *between* disciplines, and various types of interrelation are possible. Cactus deserts, bridge-connected archipelagi, and *multi*-disciplinarity (mastery or joint use of multiple separate disciplines) are far from the only ones.

We need also empirically grounded and theorized hypotheses on factors which favour ID, bridge-building and fruitful growth of the intellectual ecosystem. Some are already mentioned or implied: terminological clarification; distinguishing between modes of research; understanding disciplines as culture-bound islands, dealing with whose inhabitants demands special skills; and promotion of some shared values or (as in much practical problem-solving work) shared incentives or pressures or experience - promotion of 'common interests' in various senses. In Section 5 I consider in addition the nature and role of mutually accessible intellectual formulations: what makes some bridges entice rather than repel, feel accessible to others while not too crude to experts. It will illustrate the variety of types of inter-disciplinarity and their respective attractions and limitations.

2. A FIRST MAPPING OF THE ECO-SYSTEM

What is the rationale of interdisciplinarity? And why is ID particularly common in policy-research and development studies? This section first presents Glenn Johnson's picture of kinds of research, which links ID to case-based or policy-based research. It then adds Immanuel Wallerstein's richer historical perspective of how the conventional disciplinary divisions in social science arose and what issues they neglect: so that the disciplines sometimes need each other not only for case- or policy-based work. Wallerstein shows further how the disciplines have been modified at the margins in the past two generations, but in fact remain central though under renewed challenge. Thirdly we look more closely at development studies, as one of the marginal modifications which emerged in the post-war period, and at Björn Hettne's account of the challenges it faces to sustain its inter-

disciplinary aspirations, whether as a distinct field or as a leavening factor within the dominant disciplines.

Purposes of research: 'disciplinary', situation-oriented, policy-oriented

Glenn Johnson, a distinguished agricultural economist, including on Africa, was also an unusually reflective methodologist (e.g. Johnson & Zerby, 1973). His book *Research Methodology for Economists - Philosophy and Practice* fulfils the promises in its title. It employs a helpful classification from which I derive Table 1. The elucidation of the modes and the illustrative contents in the boxes are mine.

Table 1: Types of research, classified by purpose and mode (based on Johnson, 1986)

		PURPOSES	OF	RESEARCH
		DISCIPLINARY (in the sense of general theory-orientation - #)	*SUBJECT-MATTER (description/ explanation of a specific issue/ situation/ case/ location)*	*PRACTICAL PROBLEM-SOLVING*
KINDS	*POSITIVE (neutral description & explanation)*	E.g.: core economics; the sociologies of economics, of law, of ethics	E.g. area studies, history, biography	As a contributory component, basis for prescriptive work (* below)
OF	*EVALUATIVE*	E.g. ethics: theories of the good	E.g. history, biography, strategy review.	As a basis for (*) below. Also e.g. program evaluation
KNOW-LEDGE	*PRE-SCRIPTIVE*	E.g. ethics: theories of the right; and some general legal theory	Johnson p.212: SM work is 'seldom prescriptive'. But note also e.g. preparation of guidelines, legal & regulatory frames	Prescriptive-problem work (*): e.g. prescriptive policy analysis, legal casework

Besides the two dimensions above, Johnson used a third: types of philosophical orientation, where for economics he distinguished logical positivism, normativism and pragmatism. Thus he presented a 27 (= 3x3x3) cell cube of types of research (1986: xvii), with many illustrations.

Johnson's book was written for a disciplinary (economics) audience. He presents therefore the role of ID only as in what he calls 'subject-matter' research and practical problem-solving research. But in addition we can identify subject-matter focused, and especially problem-solving focused, *disciplines*; e.g. in the first category history or Chinese studies, and in the second, engineering and law.

ID and issue- or case-focused research

If one wishes to understand a particular person, group, locality, or country, one will try to attend to a variety of aspects. If one wants to study the impact of say economic structural adjustment on India, or Yugoslavia or Rwanda, one cannot ignore the political impacts. In studying any country, qua country not qua 'economy', one cannot ignore the possibility that economic power will be converted into political power, through campaign funding, favours, bribes, media control, acquisition of greater knowledge, and other means. If one studies the impacts of education in and on, say, Kerala one cannot ignore the cultural impact, such that no person with a certain amount of schooling will subsequently do heavy manual work. We must be 'interdisciplinary'.

Disciplines are, by contrast, based on ignoring many things. Analytical convenience has priority, to avoid taking on 'too much' - too much for analytical tidiness and in-depth examination. Although science sees itself as detached from society, its problem definitions as self-given, the enduring exclusions are often those convenient for powers-that-be, who can influence academic and research funding.

Relations between [ID] research and policy; inter-disciplinary fields

Further considerations and justifications apply when we consider ID in policy-oriented research. In a sense this is a special case of situation-oriented research. Much ID is in response to life-problem situations, where we cannot wait for eventual discipline-gained knowledge. Such work sometimes then lacks mature knowledge and may not be tidy or conventionally scientific rewarding. Further, the complexity of policy cases typically exceeds the grasp of discipline-gained knowledge, even when brought together from a number of disciplines, which leaves a need for synthetic ID work.

Policy research is not definitive of ID -- even for purely explanatory purposes the case for ID remains: the limits of any one disciplinary view, the need for a broader perspective. But it is typically far more feasible to get cooperation on policy related cases than to build joint theory. As in an art, one creatively relates relevant general tools to a particular time and place and case, compared to a science, where one aspires to capture all variation within a general formulation.

As mentioned earlier, some major disciplines (or families of disciplines) are focused on practical problem-solving, notably medicine, law and engineering. Various other fields have tried similarly to become simultaneously a profession and an academic discipline, not all of them with equal success. Public administration and urban & regional planning, to take two important examples, are better conceived as *interdisciplinary fields* (1990, 2000a).

Public administration works at the crossroads of several disciplines and a set of practical demands. In comparison to general management it requires stronger involvement also

from law, economics, history and perhaps other disciplines too, and hence cannot be simply a sub-discipline of management, nor of political science. 'Disciplines are areas of intellectual inquiry which attain a high degree of self-enclosure around a self-defined set of concepts, methods and questions. Matters not convenient to this disciplinary matrix or paradigm are left aside. A practically oriented, maid-servant (or public servant) type of enterprise like public administration can never adopt such a self-enclosure, such a prioritization of tidiness above usefulness. It has to draw on a variety of types of understanding to try to tackle a variety of types of pressing and inter-connected real issue. It integrates material from different fields without unifying them.' (Gasper, 2000a: 169).

Rutgers lucidly argues how and why public administration never has been, and never should be, a unified discipline.

> Integration does not so much result in a coherent body of knowledge but points at a process of continuously striving for the confrontation of diverging approaches in order to better understand some apect of (what constitutes) administrative reality.... integration not only results in bridge building between theories but also points at unbridgeable differences [between their perspective]. (Rutgers, 1998: 561-2)

An interdisciplinary field is inevitably marked by competing definitions and conceptions (see Gasper, 1990, on regional planning). This helps to explain the failure, even more than for general management, to make public administration a closed profession with well-defined compulsory entry conditions. Full consensus on disciplinary identity and location is in fact unnecessary: we can gain through competition of ideas; and there are many legitimate intellectual bases, from various disciplines and the schools within them, so that room exists in public administration for different specializations and niches (Gasper, 2000a).

Disciplinarity and inter-disciplinarity in historical perspective

To complement Johnson's picture we need one which is more historically aware and less economics-based. We find this in *Open The Social Sciences - the Report of the Gulbenkian Commission on the Restructuring of the Social Sciences* (Wallerstein et al., 1996). I summarize its vision in Table 2. It highlights four established divides in the terrain of social studies: 1. past- versus present- oriented; 2. a focus on supposedly 'modern' or 'non-modern' societies (i.e. Europe and its offshoots and precursors, versus the rest of the world); 3. nomothetic (seeking general laws) versus idiographic (seeking knowledge of unique cases); and 4. economics versus political science versus sociology, the three main nomothetic distillates which fractionated out from earlier integrated social studies in the late 19th and early 20th centuries.[1]

[1] At one point (p.36) Wallerstein et al. conflate numbers 1 and 3: but we can find cases both of idiographic present-orientation and nomothetic past-orientation, so those two dimensions are not reducible to one.

Table 2: Wallerstein's anatomy and genealogy of modern social studies

SOCIAL STUDIES	NOMOTHETIC	IDIOGRAPHIC
PRESENT ORIENTED I. 'Modern societies' *II. 'Pre-modern societies'*	- "The Triad" the outcome of 19th C. evolution of European social thought: 1. Economics: market 2. Political Science: polity 3. Sociology: society *- Post 1945 expansions of Triad to discuss the non-European world*	- Cultural studies & newer anthropology (which have undermined the old social sciences v. humanities division) *- Some older-style anthropology / ethnography (but some anthropology became nomothetic)*
Emergent cross-cutting sub-fields, across the past-present divide, etc.	Post 1945 mushrooming of overlap sub-fields (e.g. quantitative economic history) which span one or more of *the four divides*: 1. past/present oriented; 2. 'modern/non-modern' societies; 3. nomothetic/idiographic; 4.. economics/politics/sociology	... Many such sub-fields - area studies, development studies, economic anthropology, etc.- are largely concerned with coming to terms with (and keeping tabs on) *'non-modern societies'*, no longer left for the ghettos of Orientalism and ethnography
PAST ORIENTED I. 'Modern societies' *II. 'Pre-modern societies'*	- Economic history *- Post 1960 expansion of field of attention of economic history*	- History *- 1. 'Classics' (about supposed precursors of the modern)* *2. Orientalisms (study of supposed non-precursors); partly absorbed now into area studies and the broadening historical focus of formerly present-oriented fields*

This picture seeks to emphasise, firstly, the conditionality and changeability of disciplinary boundaries. Science appears as driven by power and rewards, by whatever types of data are created and available, and thus directly and indirectly by the needs of States and what types of study they would encourage. 'Nearly all social scientists assumed [that] political boundaries fixed the spatial parameters of other key interactions - the sociologist's society, the macroeconomist's national economy, the political scientist's polity, the historian's nation.... social science was very much a creature, if not a creation, of the states, taking their boundaries as crucial social containers' (pp.26-7). With the expansion of the 'three [main] nomothetic social sciences into the non-Western world,

these non-Western areas too became subject to state-centric analyses. The key post-1945 concept of "development" referred first and foremost to the development of each state, taken as an individual entity' (p.81). 'Human Development' thinking may now diverge from this, as does International Political Economy. Gore (1996) predicts the collapse through incoherence of the post-1980 development orthodoxy which moved to a global (market-based) normative framework but retained a nation-centred explanatory framework.

Secondly, Wallerstein highlights the efflorescence of work since the 1950s which in some or other way crosses the traditional lines, and asks whether this is enough. While many feel that the growth of hybrid fields has been very fruitful and should be extended, others 'believe that the concession of "interdisciplinarity" has served as much to salvage the legitimacy of the existing disciplines as to overcome the waning logic of their distinctiveness. [They] have urged a more radical reconstruction to overcome what they perceive as intellectual confusion' (p.47). Further, the growth of hybrid fields was possible when resources were plentiful. When scarcity bites, the old established disciplines bite first, so one can no longer avoid the issue of how to reconstruct them (p.96). Defenders of the disciplines will add that disciplines have deepened and become more subtle, and even sometimes more open - though economics probably has not - since the 1950s when the need was felt for transcending the narrow existing social sciences (and humanities) via inter-disciplinary fields and area studies. So, can and should ID still continue?

The challenges for development studies

Development studies combines Johnson's two grounds for ID, case-/situation-orientation and policy-orientation, plus Wallerstein's: the need for a broad view on a world too complex and interconnected to be adequately described by any single discipline.

For Björn Hettne, in his *Development Theory and the Three Worlds*, development studies is 'a problem-oriented, applied and inter-disciplinary field, analysing social change in a world context [of material disparities], but with due consideration to the specificity of different societies in terms of history, ecology, culture, etc.' (p.4, 1990 edition); it is typically marked by normative and policy concerns (1995:12).[2] While 19th and early 20th century social science often had much of that orientation, even if Eurocentrically, it was later substantially replaced by more abstracted, static and compartmentalized work. However, much of the post Second World War work on and in low-income countries found it had to transcend this now mainstream social science. 'Development theory [proper] contains various social science approaches which have tried to tackle the problem of "underdevelopment" and were significantly changed in

[2] This sub-section draws from a review essay on the 1995 edition of Hettne's book, in the *European J. of Development Research*, 1996 (2).

the process' (1995:1). Contributions came from both Northern and Southern intellectuals and practitioners on the peripheries of the disciplines' power-spheres, who found insufficient the divisions of intellectual labour established to describe reproduction of mature industrial capitalist societies.

While increasing globalization has further reduced the powers of the actor that so much development studies sought to serve, the developmentalist nation state, it has not removed the case for the type of focus which Hettne summarizes, including an ID approach. Hettne sketches some ideologies of global order besides neo-liberalism: including neo-populism, which attempts to (re-)build communities as alternatives to and controls on capitalism. He presents three principles of this alternative development: 'The principle of territorialism as a counterpoint to functionalism. The principle of cultural pluralism as a counterpoint to standardized modernization. The principle of ecological sustainability as a counterpoint to "growth" and consumerism' (p.199). Development then means improvement of the situation of 'a certain group of people, with certain cultural values, living in a certain region', not growth 'of GNP or some other abstraction' (p.191). Such a focus on specific cases would match the rationales for ID which we saw earlier.

In the present ongoing, phase, the overwhelmingly Third World focus of development studies declines, as old definitions of 'Worlds' dissolve; but development studies approaches acquire broader application, found to be necessary in North and East too. The very term 'economies in transition' for the former Communist bloc suggests again an economistic conception of a universal endogenous process; but in reality 'the role of the external context, is strong and impossible to leave out' (p.245). Crude application of neo-liberal and modernization theory in Eastern Europe can produce the same sorts of crises and reactions seen earlier in the South. The shocking disintegration of the former Yugoslavia is a prime illustration, in the wake of the trap of first easy loans, then soaring interest rates, then crudely enforced structural adjustment (Woodward, 1995).

Development theory's significance is thus, according to Hettne, as 'a precursor... [and] catalyst... forcing the excessively specialized and static social sciences to focus on development and change... [and return to] the classical tradition of a unified historical social science' (p.xiii), though now on new, non-Eurocentric, foundations. It must also 'draw on the IPE [International Political Economy] tradition in order to remain relevant in an increasingly globalized world economy' (p.xii). This scenario of catalytic action - neither the withering of development studies nor its consolidation as a separate area - coexists with Hettne's recognition of the predominance from around 1980 of neoclassical economics and Anglo-American managerialism. For he expects that recognition around the world will continue to grow of the social requirements and impacts of markets and economic growth, and of their human and ecological costs.

Development studies is not then 'a "discipline" in disintegration' (p.249). From Hettne's own analysis it has always needed to be an inter-disciplinary field intellectually, not a

separate discipline, even when defined 'in terms of problems rather than countries' (p.287) and especially when 'development is becoming a global and universal problem' (p.266). Organizationally, however, a question remains - especially in Northwestern Europe, where interdisciplinary development studies became more institutionalized than elsewhere: whether such work can now be left to the existing academic disciplines. Here Hettne is in two minds, eager to achieve a unified social science, hesitant as to whether it is yet time. The 'no' view is better argued: given the disciplines' internal preoccupations and norms, and given too that he is 'still committed to the project of one - albeit pluralistic - research territory' (p.20) and accepts that the needs in low-income countries are 'still, and for good reasons, regarded as the core area of development problems' (p.265), it is not 'time to give up [the development studies] space [organizationally]. Rather it is important to defend it against the rising wave of monodisciplinary fundamentalism - or formalism' (p.286).

Having considered rationales for interdisciplinary approaches, we must consider the constraints set by the rationales for disciplinarity. We can subsequently look for possible feasible steps forward.

3. THE SOCIAL ORGANIZATION OF SCIENCE

Understanding disciplinarity, as a basis for understanding and attempting interdisciplinarity

The terms 'discipline' and 'disciple' are not close by coincidence. 'Disciplines' consist of social formations as well as intellectual formations. They are organized groups or networks which discipline members and students--by rewards, punishments and bestowal/withdrawal of identity and recognition--to create disciples. In this sense they are successors to the priestly orders. They seduce as well as drill, providing to young people of an impressionable age a nest, a community, a style and set of habits, a gradual induction to mysteries, and many intellectual rewards from the excitement and tractability of the limited puzzle. For a variety of reasons, treated by theorists of science such as Thomas Kuhn (1969) and Jerome Ravetz (1973), their in-depth rather than in-breadth approach is often functional and even necessary. Yet to maintain their territories they can discourage creative, exploratory work which crosses borders. For effective ID we must study disciplinary practice and understand the constraints it presents.

Universities are the cradles of disciplinarity, given firstly, their core role as a machinery for basic academic formation, and for the in-doctrination (internalization of doctrine) and socialization of the next generation of academics; and secondly, the incentive structures for academics to then play safe after (and even during) their PhD studies and publish prolifically by doing detail work (Earl, 1983). Bizarrely, academics resident on

the same campus typically have little or nothing to do with their colleagues from supposedly sister disciplines.

Sheldon Rotblatt (1998) defends disciplinarity, as a system that shields academic freedom against political domination by asserting the existence of areas of deep and organized knowledge established and to be governed by scientific criteria only. But by tying the structure for research and public service to the structure for basic training, universities constrain and inhibit the work that is done. Co-operation in teaching is sometimes even harder, thanks to turf- and budget-defence. The predicted relative decline of the university, for teaching and more especially for research, might then augur well for ID. However the socially secluded university is not disciplinarity's only home.

In many ways the depth and virulence of disciplinary chauvinism is surprising. Consider the frequent struggles within joint sociology-anthropology departments. Giri cites several instances which led to splitting (1997:4), and there are others. More significantly, even after having established their own territories, flags and passports, the disciplines often continue to have poor relations: to disparage and (yet) to largely ignore each other. The generalist-linker is usually a role with low status.

Why is there not simply more acceptance of ignorance regarding other disciplines? Why a closed rather than an open disciplinarity? Some possible reasons are: the arrogance of science; fear of the unknown; single-discipline social science degrees, from unfortunate imitation of the natural sciences; the defence of departmental budgets; the reduction of many universities to training factories for bureaucracies and businesses; and the delightful convenience of disciplinarity, like bureaucracy, for those who can then ignore most aspects of other people's situations.

In addition, we should note four fundamental factors. First, the social science disciplines have historically emerged as in some respects competitors rather than partners. Second, disciplines are cultures, and cultures vary. Third, disciplines offer 'homes', bases of identity. And fourth, disciplinary boundary setting is often underpinned, especially in economics, by a 'Newtonian' ontology which declares that the whole is the sum of the parts, which can therefore each be examined separately.

First, the social science disciplines did not grow as partners. 'Each and every specialization was started in response to incidental historical events or circumstances. Problematic issues were taken up, and when the going was good the effort expanded, regardless of others' (van Nieuwenhuijze, 1978:18). Little reference was made to each other's roles. Aidan Foster-Carter argues that the social sciences are in fact competitors for dominance, not a chain of emergent subsets like physics-chemistry-biology. They represent competing perspectives, each of which may consider it can cover everything or at least subsume the others as special cases.

together without any fundamental difficulties. Each of these premises is adequate in the older parts of physics, but not for complex systems involving people.[3]

Much of economics can be even more fiercely monist: it does not recognize other valuable ways to view an economic or human system (Söderbaum, 2000). Thus, in sharp contrast to some other social sciences, only one paradigm, neo-classical economics, is now taught in most economics departments, let alone much on other disciplines and mutual roles; and forms of neo-classicism become imperial within economics and beyond. We return later to the special problem of economics in ID studies.

Suggestions arising for interdisciplinarity

Having identified limitations of disciplinarity, some authors make bold calls for interdisciplinarity. We must take into account however also the experiences and difficulties in ID, and the gravitational pull of the disciplines, for reasons good and bad. Recommendations concerning ID must be feasible, not as if in a world without gravity and other constraints.

Norgaard builds a persuasive case for dropping the premise of monism, that there is one correct way to understand a system. He proposes that major 'participants in processes of learning and deciding [must]: 1 - be conscious of their own conceptual frameworks, 2 - be conscious of the advantages and disadvantages of the frameworks used by others, and 3 - be tolerant of the use of different frameworks... by others.' (p.101). Each framework has limits and none can be simply merged to the others. Coherence in the understanding of many issues, e.g. 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' (Norgaard, 1994:140), like the mechanical models of physical scientists versus the evolutionary models of biologists.

Integration of these partial, limited perspectives should be through a sort of democratic science:

> ...knowing must be a social process whenever separate disciplinary understandings must be merged... [for] the patterns of thinking really are incommensurable... Scientists from each of the disciplines would have to recognize the equality of the different disciplines, acknowledging that each has important information to contribute to the whole. Scientists would be obliged to stay abreast of the important findings in the sciences around them.. [and] to participate in the sharing of knowledge and the

[3] C.T. Kurien gives a similar picture, of a Newtonian style adopted by neo-classical economics (1996: 210): 1 - precise and universal laws, which apply uniformly everywhere; 2 - additive relations: the whole is the sum of the parts; 3 - mechanical: like a machine, each part has its fixed, unchanging role; 4 - nothing fundamentally changes; timeless verities. 5 - the system can be understood fully by outside observers.

> building of the collective understandings necessary to work with or to avoid complex problems. (Norgaard, 1994: 147-8, 154)

In Martinez-Alier's terms, drawn from Otto Neurath, we can essay 'orchestration of the sciences', bringing them together and interrelating them, without expecting or desiring to absorb them all into one discipline (old or new).

How is orchestration to be promoted, and sustained? Norgaard considers that deeper understanding and some areas of consensus are slowly emerging on say climate change, through intensive interaction of disciplines and gradual increase of mutual respect and trust. But he notes elsewhere (p.102) that:

> Any given framework is better understood by, or more appreciated by, or results in answers which are more advantageous to some people than others. Any framework that has been highly elaborated to stretch its usefulness can only be understood by a few who are well informed of its technical details. The use of a single framework, without modification for regional differences, facilitates control from a single center of analysis. Thus the use of a single framework disenfranchises or disqualifies the majority, facilitates the tyranny of technocrats, and encourages centralization. Openness to multiple frames of analysis is a prerequisite to democracy and local control.

His analysis identifies a prerequisite for both democracy and more adequate understanding, but also implies major constraints.

Wallerstein makes recommendations at two levels. First, a revolutionary vision: we should rebuild the social sciences on a new plan: for example, perhaps a division between macro (large-scale, long-term social processes) and micro (individual action), rather than between economic, political and social; and that all social scientists/ science should be historical *and* sociological *and* economic (p.96). Secondly, a set of more practical suggestions for the shorter-run (pp.103-5):

- Year-long mixed research groups, convened at international centres, each on an urgent theme.
- Fixed-term cross-disciplinary research programs with specific objectives, to test these programs' potential.
- All professors must serve two departments.
- All research students must have a minor, via coursework or research.

These arrangements appear relevant and feasible. Yet they remain exceptions. Not even schools of development studies routinely practice them.[4] Professorial designations and professional formation for consciously building ID remain weak. One has to motivate and sustain such measures, against the gravitational pull of existing concentrations of resources, habits and identity.

Johnson's recommendations are based on fuller review of experiences and constraints, for a variety of types of research even if not all. His book stresses the legitimacy and

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[4] The Centre for Development and Environment in Oslo involves all its graduate students in the Centre's interdisciplinary projects, with significant benefit.

importance of MD work, by which he means not only the presence of several disciplines but also an open ID interaction in 'subject-matter research' and policy problem research. But since ID and MD are demanding, complex and costly, including in management terms, subdivision and specialization are sometimes better. In his perspective both disciplinarity and inter-disciplinarity are then legitimate and necessary, separately and in research teams. They are also strongly complementary. Kenneth Boulding observes in a foreword to Johnson's book that intellectual division of labour brings various economies of specialization, which as in other cases of specialization should be complemented by inter-specialization trade if full benefits are to be gained. Interchange need not lead to consensus, indeed consensus sometimes hinder intellectual progress; but competing views should be formed in awareness of each other, not in mutual ignorance.

Boulding does not ask how, if intellectual specialization brings narrowness and mercantilist chauvinism, the trade is to happen. Johnson identifies as predisposing factors for effective 'multi-' (in my terms open inter-disciplinary) work: being 'free enough of disciplinary chauvinism' (p.204) and 'philosophically flexible' (p.205). These factors are not self-nurturing nor non-nurturable. Johnson leaves them as exogenous: some people have them, others don't, so pick the first type for certain jobs. The history of economics, his discipline, suggests how insufficient that strategy is.

Giri (1997) probes deeper on how to promote and sustain ID, by examining the attitudes involved, not only organizational arrangements. In his view, the value shift required is from a conception of the scientist as master (knowledge gives power) to as servant; and from a nest of identity as a professional of type T, to a self-conception as pilgrim and seeker. It will be prudent to expect a limited rate of progress in such shifts.

A complex eco-system of inquirers

From the examination of both disciplinarity and inter-disciplinarity, I propose a picture similar in some ways to Johnson's, recognizing different valid types of work, plus feasibility constraints on ID. But I draw more on the critique of disciplinarity and thus go beyond him.

We will always need regular communication between a diversity of types and styles of work. As in business, so in intellectual life, we need 'bridging capital' to span between communities as well as 'bonding capital', to bind within them. This bridging and communication involves a variety of networks and roles and some shared 'languages'.

(1) By *networks* I refer also to organizational linkages and meeting places. For example, from centres of ID some members should maintain links to their 'own' disciplines; and from D centres some members should link to ID work. Research newsletters in development studies (e.g. the well established ODI Briefing series)

provides a valuable middle ground, between books and papers that few people have the time or impetus to read and article abstracts that speak only to fellow specialists.

(2) Inter-disciplinary work cannot flourish merely by interaction of disciplinary specialists. Two sets of *roles* which are sometimes disputed yet of considerable importance are methodologists and generalists. The needed bridgers, 'translators' and synthesizers may be based in one discipline (e.g. Scitovsky in economics and Lea in psychology, in the interaction of economics and psychology); or 'supermen', true masters of more than one discipline (e.g. Sen in the interaction of economics and moral philosophy); or 'mutant' intermediaries. Brokering is equally important for purposes of utilization and policy influence.

(3) 'Bridges' and 'bridging capital' are useful metaphors in discussing ID, but 'bridges' can also be 'fly-overs'. A superior image in several respects is that of an *eco-system*, within which many species and hybrids co-exist and interact in various ways. This plurality of activities and corresponding intellectual communities matches the maps we borrowed and extended from Johnson and Wallerstein. A complex eco-system requires a complex system of ideas (concepts and models) to describe and understand it.

(4) We should distinguish for example between *intra-personal and inter-personal ID*. Some useful current discussion offers advice for ID/MD teams; Berge & Powell (1997) warn, for example, that each new discipline added to the team seriously increases coordination costs. ID should not however be *equated* to ID teams. It can occur in the absence of direct interaction with those from other disciplines except through their writings, and sometimes even in the absence of those. Not all ID research happens between people: some of the best happens within one person (like the work of Jon Elster or Albert Hirschman; Norgaard, 1994; Scitovsky, 1976, 1992; Roe, 1998, 1999). Of course the intra-personal interaction typically trades on previous discipline-based work and past inter-personal interactions.

(5) Interaction requires mutually accessible and acceptable *intellectual frameworks*. Sometimes a superior framework is not accessible and acceptable to others whose cooperation is needed. Scitovsky's remarkable work to draw from psychology a scientific basis for consumer and welfare theory apparently demanded too much adjustment by economists. It had impact not in economics but in a new cross-disciplinary enclave, economic psychology. Possibly social exclusion theory includes better social analysis than do social capital theory or capabilities theory yet lies beyond the reach of many economists. The inferior theories might function better as bridges. We consider this in Section 5, after looking next at the nature of the 'bridging' problem presented by economics.

4. THE SPECIAL CASE OF ECONOMICS

'Anyone who works in an interdisciplinary way is considered a bad economist' (David Pearce, in Ravaioli, 1995:26).

'...they have gotten into the disciplinary organization of knowledge in which economics abstracted from the physical world and focused on exchange, exchange value and monetary transactions... [thus] not dealing with the real world any more.' (Herman Daly, in Ravaioli 1995:28.)

I have proposed a complex ecology of social and development studies, recognizing both the strong roots and severe limits of disciplinarity. We need to look further at the variety of types of multi- and inter-disciplinarity that exist, and at the theme of 'bridging capital', notably at intellectual formats attractive across groups. The discussion will remain politely vague, and the treatment of bridging capital unfocussed, unless we recognise that in social sciences and development studies the main problem group for ID is economists; not human geographers or anthropologists or even most sociologists, political scientists and cultural studies folk. Possibly some sociobiologists present problems too. For sustainable development, ecologists are far better trained to consider wider systems, which cross traditional science boundaries, than are most economists.

Aspects of the problem

Economics has an impressive concern for objectivity and rigour, but is, in its mainstream, antagonistic to perspectival pluralism and to many types of value. Its standard box of tools dominates many of its practitioners. It constitutes a special problem in interdisciplinarity given its combination of comparatively poor 'external relations' with other sciences, assumptions chosen for convenience more than realism, yet strong influence and policy-orientation.

First, economics has greater problems in its relations with other social sciences than we see at other social science interfaces. Its universalist claims, the absence of stated limits to its reach, produce a weak concern for history and qualitative change. Economists can acquire a superiority complex, seen for example in some interviews in Swedberg (1990). Yet the leading economists interviewed were clearly worse read in sociology than their sociology counterparts were in economics. While an explicit vision of economics as the master social science--the science of choice in general, able to absorb the other fields--remains a minority view, most economists do not see their subject as only one perspective amongst others with which they vitally must interact. While education in other social sciences often early on situates a field in relation to others (see for example Bottomore's classic text *Sociology*), economics textbooks do not.[5] Even

[5] Here is a sample from my shelves. (1) Lipsey's best-selling 'An Introduction to Positive Economics' (1975 edition) does not acknowledge the existence of other social science disciplines. It opens instead with a long extract from William Beveridge on the aspiration to be like physics. (2) Joseph Stiglitz &

some economists who in fact practice ID, learning from other areas, formally decry the notion, perhaps identifying it with super- or trans-disciplinarity.

Second, economics seems to have problems on other frontiers too. Natural scientists can find its assumptions and methodology weird (as reported in Waldorp, 1993; Anderson et al., 1988): for example, insistence that its core presumptions are *a priori* true, not supersedable or worth testing, its priority to abstract deduction above empirical exploration, and its general failure to collect much of its own data or converse with people.

Third, economics has special significance for no other social discipline matches its long history, prestige and influence. In a money-based and growth-fixated world, societies are routinely referred to as 'economies' and the world itself becomes 'the world economy'. Economics is uninhibited in policy advice by feelings of being polluted or demeaned; on the contrary, it gives policy advice high status. Gunnar Myrdal analysed the contrast here with other social sciences. There is no explicit scientist versus engineer distinction; economists are somehow supposed capable to both theorize and act/ problem-solve. In policy debate their frequently absolutist style--emphatic proclamation of supposed universal truths--gives economists rhetorical advantages compared to say sociologists (Baker, 1998). Not content to report their findings and leave others to use them in policy argumentation, economists often race on to pen a paragraph on 'policy implications' from their extremely narrow premises and data. Let me quote a recent study, which I leave uncited, of schooling in country X. It finds that private school graduates earn more, and notes other studies which concluded that these graduates have also learnt more, more cost-effectively. The study immediately 'suggests the need for greater private participation in the education sector', despite having given no attention to other dimensions, such as issues of nationbuilding or brain-drain or willingness to work in priority sectors, or possibilities for reforming public schools. Underlying economics' narrow formats for policy analysis are typically the prioritization criterion of willingness *and ability* to pay, in the world economy; and a style of abstraction derived from physical science which can become very dangerous when applied to social and environmental systems.

John Driffil's 'Economics' (2000 edition) is blank too on other social sciences or humanities, as is (3) Julian Le Grand et al.'s 'The Economics of Social Problems' (1993 edition). So are broader-minded economics textbooks, such as (4) Richard Gill's 'Economics' (1973 edition), despite its strong emphasis on describing real economic life and thus on what has to be explained, and (5) Ken Cole et al.'s 'Why Economists Disagree' (1983 edition). The best of, in this respect, a bad bunch is (6) Samuelson's 'Economics' (1976 edition) which at least acknowledges in a few sentences the presence of bordering, even overlapping, fields of study - but in a section entitled 'The Queen of the Social Sciences'.

Ill-chosen abstractions?

> Five hundred years ago, based on the hypothesis of a relationship between bad blood and disease, blood-letting was commonly practiced. We know now that the hypothesis had some basis but that the cure *lacked a systemic view of the body*. And taken to an extreme, as it sometimes was, death by blood-letting is certain. Putting knowledge from controlled laboratory experiments into open social and environmental systems is little different from blood-letting. (Norgaard, 1994: 188; my italics).

Using predictions from highly abstracted economic models as the basis for massive social engineering--as in IMF stabilization programes, World Bank structural adjustment policies, and 'big-bang' transition plans in the former Soviet bloc--equally deserves description as blood-letting.

A 'Newtonian' style of theorizing has contributed to making mainstream economics resistant to ID and partial to emphatic one-eyed policy advice. Norgaard, Wallerstein and especially Kurien, who gives detailed examples, provide penetrating critiques of the permanent, not just temporary, inattention to *key* socio-political variables, treated as in economics as constants. Abstraction from 'the essence of the human and the social [deprives] the system of the possibilities of change over time' (Kurien, 1996: 115). We must abstract in order to analyse clearly. But we must abstract from incidentals, *not* from essentials, and still not confuse our abstracted models with reality. Mainstream economics has instead abstracted with priority to its own convenience. Developing and teach a tidy self-enclosed mathematicized body of doctrine that gives clear-cut standardized claims has been easier than to grapple with the real world.

Kurien's general conclusions deserve to be quoted:

> "the economy" is not an independent entity but something that is mentally carved out for purposes of enquiry... not an entity with well-defined boundaries, but always merging with other social spheres... porous at the boundary... always in a state of flux within because it is the result of the interaction of diverse social forces.. (1996: 56).
>
> [There is no precise boundary to the economy.] ..since the household and the state are constitutents of the economy, their "non-economic" considerations will seep into the functioning of the economy... [Whereas] neo-classical theory slices off the economy completely from the rest of the social processes and confers on it an autonomy which it does not have.... by insisting on symmetries, regularities and uniformities as the essential logical properties of theory, neo-classical economics provides a conceptualisation of the economy devoid of its essential features. (1996:144-5)

Kurien concludes that the economy is in reality an evolving mosaic of units of heterogeneous structure and agenda and diverse patterns of interaction, which require case-by-case examination and an evolutionary perspective.

Drawing on the work of their team-member Ilya Prigogine, the Gulbenkian Commission warns similarly that:

> [Newtonian physics] describes systems at equilibrium or near to equilibrium but not systems far from equilibrium, conditions that are at least as frequent, if not more frequent... [In contrast] The conceptual framework offered by evolutionary complex systems as developed by the natural sciences presents to the social sciences a coherent set of ideas... [that matches those of social scientists resistant to] the forms of nomothetic analysis inspired by the science of linear equilibria (Wallerstein et al., 1995:62, 64).[6]

Newtonian abstraction thrived in economics not only because of the prestige of Newtonian physics. The particular abstractions used--from power relations, ownership arrangements, social environment and justice--made neo-classical economics a handmaiden of those in power (Kurien, 1996:103), who thus provided institutional backing.

Economics has abstracted from the physical world too, as have sociology and political science, unlike geography, anthropology or regional planning. The environment, physical and social, is assumed constant, even if being saturated with pollutants. That the modern world economic system and the corresponding rise of an economics discipline match the era of fossil fuels are not emphasized. 'What economic thought exists on the longterm potential for development is either inconsistent with knowledge accumulated in the natural sciences or relies on an as yet unidentified [i.e. unproven] source of energy' (Norgaard, 1994:37).

While fear of environmental collapse has started to induce some response from economists and institutional backers, the mainstream economics mind-set offers considerable resistance. The environment is not a compulsory topic in training and many of the top economists interviewed by Ravaioli had not read a single book on the environment or ecological economics. The topic is considered relatively trivial intellectually and practically: handleable by the neo-classical tools of price adjustments and internalizing externalities. Price signals will convey the required information and incentives when appropriate, opine Friedman, Becker and Hahn: as if markets were complete and represent the poor and future generations. Attempts to change lifestyles and reduce consumption are pointless and/or unacceptable (Friedman; Spaventa); likewise attempts to change world distribution, unless and until a catastrophe happens (Hahn).

When pressed, Ravaioli's mainstream interviewees fall back on faith: we must simply hope for technological salvation, notably a clean and cheap mass energy source; or in some cases on disciplinarity itself as justification for not considering the physical environment centrally.

- For Hartje: 'Most social sciences necessarily have a limited perspective.... like any other discipline economics should be aware of its limits' (in Ravaioli, p.134). Does being aware of one's limits mean being humble as to what one understands and willing

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[6] Harrison White, in Swedberg (1991), makes similar criticisms.

to interact with others who can complement that, or being defensive and having and excuse for remaining restricted and non-interactive?

- For Malinvaud, remote in a disciplinary monastery: '..the best way to help those [Third World] nations would be to modify our own nations, change our lifestyle. And that would mean making people more aware. It comes back to what we have already said. And it's something that has got nothing to do with economists.' (Ravaioli, p.94).

- And for Hahn: 'The right question is one for which you can conceive of an answer' (Ravaioli, p.67). Look under the lamp-post because there we have some light. Hahn presumes the criteria of disciplinary research (Johnson's Type 1) for urgent concrete and policy problems (Johnson's Types 2 and 3); and he wishes to work in his familiar disciplinary corner with its familiar types of 'answer', rather than interact with others who might introduce him to types of answer and question of which he has not conceived.

Possibilities for influencing economics

I make five types of suggestion. Firstly, we need more sociological and psychological, and self-reflective, study of economists and the economics discipline, given their importance yet the relatively little work so far. I recall only the confirmed finding (Frank et al., 1993) that American economics students are and become more selfish than other students; and some pieces by Peter Earl, David Colander, Arjo Klamer, and Deirdre McCloskey. Possibly other feminist economists have also explored the topic.

Secondly, it may be more realistic to try to support processes of change in power-centres like the World Bank than to concentrate directly on university economics departments. Policy agencies appear more reality-oriented and under pressure to respond to failures of their prescriptions, such as in Sub-Saharan Africa and post-communist Russia, and to unexpected crises such as East Asia 1997. Söderbaum considers that 'little can be expected in terms of pluralism from departments of economics as they stand at the end of the 20th century' ((2000: 128). There is too much vested interest, too much rent-taking from the near monopoly position of neo-classical economics. Other environments, such as schools of business studies, can provide better settings for new thinking. On the other hand, declining student numbers for economics, especially at PhD level, might eventually force changes. And as Wallerstein notes, it is not sensible to abandon the terrain of the traditional disciplines to the narrow-minded. One needs to fight there as well as to construct new terrains.

Thirdly, while clear on the force of habit and vested interest, my own reading of the psychology of economics has important space for motivation by puzzle-solving and social ideals. Economics' allure has been the promise of combining the joys of science--for the market in modern societies provides a universe for measurement and calculation, in imitation of natural sciences--with the pleasures of social relevance. Highlighting likely contradictions in economics, both internal problems and contradictions with other findings, can influence some economists.

For example, mainstream economics has an ideology of value pluralism yet ignores some types of value-system. Similarly, it assumes that in the economy people are in general selfish but follow rules, whereas in science they are truthful and altruistic as well as follow both rules and reason. Resulting areas of weakness and tension then include the world of crime, and how money can buy power by cooptation, bribery, intimidation, PR and media hegemony. Mainstream economics presumes no actors powerful enough to 'fix' the market or dominate the polity. Further there is little attention to how to counteract the forces of self-interest in economics itself, such that economists can choose the assumptions that are most convenient for producing papers and status, concentrate on manipulating data of dubious quality, and stay away from challenging their funders.[7]

Fourthly, broadening the methods used and known by economists -- adding interviews, group interviews, participatory exercises, contingent valuation surveys, and involvement in ID projects -- provides evidence incompatible with their disciplinary assumptions, and contributes to re-thinking.

Lastly, amongst the strategies of influence to examine are particular research programs and the types of interdisciplinarity they illustrate. We should look at how far they can lead economics into the social world. We turn to this now in Section 5. To do so we must first become more precise about different types of interdisciplinarity.

5. A FURTHER MAPPING, OF NICHES AND NETWORKS - -- I.D. VARIANTS DEFINED AND OBSERVED

Clarifying meanings and varieties of 'interdisciplinarity'

One well-known economist describes ID as 'an empty set', implying that no distinctions are, supposedly, necessary. The assertion reflects ignorance of the history of and research on ID. But 'interdisciplinarity' is indeed not a transparent term. While 'inter-' connotes between, the form and outcome of relations between the disciplines remain unspecified. Let us distinguish the following variants, successors or partners to disciplinarity.

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[7]. Norgaard provides this example (1994:124-5). The delimitation of the range of economic agents, to individuals, firms and governments, is based on a notion of persons as self-standing, asocial, not formed by and engaged in forming cultures and groups: families and communities at various levels. Yet those groups better fit the presumptions of economics: the ability to scan and know their environment and to bear all the costs and benefits of their actions. They are ignored because if economics took them seriously it would lose its determinacy - for behaviour emerges out of discursive interaction at and between these levels of agency and through culture modification - and economists lose their high-priest, econocratic role.

1. **Multi-disciplinarity.** In this case complementary but non-interacting disciplines are drawn on, as happens in for example a construction or agriculture project, where each discipline makes its separate input, often presented in an independently authored chapter in a report. This represents an uncritical addition of different mono-disciplinarities. Its pluralism means though that the member disciplines are less likely to become imperial in style.

We must distinguish these non-interacting, multi-disciplinary cases from all the other variants below, which involve interaction of disciplines and hence deserve the ID label. For example, while some development studies journals mainly or substantially take interdisciplinary articles--say *Development and Change, European Journal of Development Research, Forum for Development Studies* (Oslo)--various others mainly take articles from a range of disciplines and are multi- rather than inter-disciplinary, such as *World Development, Journal of Development Studies,* and the *Journal of International Development.* An interesting test would be: how far do economists who publish in *World Development* read many or any of its non-economics articles, and vice versa?

2. **Open-disciplinarity**. Here disciplines interact and seek to learn from each other, especially in analysis of a shared issue. Berge & Powell use another term for this but capture what I refer to: 'researchers identifying and confronting differences in perspectives and approaches; not in order for one to be [judged] "better"... but for each to learn from, and contribute to others; and hence also become more aware of the merits and limitations of their own' (1997:5).

3. Inter-disciplinary openness and exchange may lead on to:

(a) **New sub-disciplinary fields,** in which a discipline pursues with existing methods new problems generated by learning from other disciplines, as exemplified by environmental economics and New Institutional Economics (NIE).

(b) **Cross-disciplines**: here new ID fields arise with new methods as well as new problems, and with cross-disciplinary participation. (Martinez-Alier, 1999:136, uses the term 'interdisciplinary or transdisciplinary field' similarly.) Ecological economics for example is not only economics as attempted by ecologists, or by economists who have read some ecology, but by any one who has absorbed an ecology perspective. This involves real re-thinking not just extension of an approach to a new topic. It insists on pervasive and fundamental linkages, complexity and hence a broader approach. Environmental economics in contrast sticks to mainstream economics' approach of high abstraction--with the world treated as disconnected so that the *ceteris paribus* condition holds--followed by a premature race to policy conclusions. It has far more money and power behind it (Brasso in Ravaioli, 1995: 121-2).

Table 3 identifies more of these fields. It extends McNeill (1999)'s classification of old and new intersections of methods and topics, by including also the third of Wallerstein's Triad, political science, and its traditional quarry, the polity.

Table 3: An extension of McNeill's map of core- and cross-disciplines and inter-disciplinary fields

STUDY OF: STUDIED BY:	*NATURE*	*ECONOMY*	*SOCIETY*	*POLITY*
ECOLOGY	*Core discipline*	Ecological economics	Socio-biology?; human ecology?	
ECONOMICS	Envtl. econs. (but this is not strictly a study of nature)	*Core discipline*	'Rational choice'; NIE; social capital	'Public choice'; 'new political economy'
ANTHROPY./ SOCIOLOGY	Ecological anthropology	Econ. anthropy. / sociology	*Core disciplines*	Political sociology
POLITICAL SCIENCE	Political ecology	Some 'political economy'	Power-centred social theory	*Core discipline*

Inter-disciplinary fields like public administration, regional planning, and development studies, which we discussed earlier, involve all of the above forms and more, since they work at the crossroads of several disciplines and sets of practical demands. They never can, nor indeed should, be fully integrated by a single definition.

4. (a) **Imperial-disciplinarity**: where an existing discipline tries to absorb or displace another. '..."economic imperialism" is probably a good description of what I do' said Gary Becker (Swedberg, 1991:39). His colleague George Stigler rode under the same banner (1984). Their associate James Coleman expected instead to absorb economics to sociology, but through reforming sociology by importation in a central role of rational choice concepts from economics (Swedberg, 1991).

(b) **Mega- or uni-disciplinarity**: where a single well-integrated all-purpose social science discipline is aspired to; e.g. rational choice social science, cruder Marxism (perhaps even rational choice Marxism), and cruder versions of socio-biology (more sophisticated versions allow for *co*-evolution of culture and genetic traits; Norgaard, 1994). It will transcend existing disciplines but not disciplinarity. Mega-disciplinarity might be even more dangerous than disciplinarity if it heightens the hubris concerning the knowledge claims made and eliminates counter-perspectives.

5. (a) **Super-disciplinarity**. 'Super' denotes above, beyond, or over. Here a theory is provided that spans and locates and delimits competing disciplines, indicating how they fit different contexts: e.g. perhaps Mary Douglas's Cultural Theory (CT) and more refined Marxism (e.g. Cole et al., 1983; Cole, 1999). Sometimes their advocates proceed into a mega-mode, seeking to subsume not merely link.

(b) **Supra-disciplinarity**. 'Supra' also denotes above, beyond; but in addition transcending. Here a framework claims to locate and delimit competing approaches and then guide context- *and* purpose-relative selection. Emery Roe (1998) seeks to surpass CT's super-bid, by defining a variety of types of theorizing which one moves between

according to purposes as well as context, with CT as only one such type. This transcends disciplinarity because methods no longer determine problems; inquiry is driven by externally defined issues and purposes. (I should add that CT and Roe treat approaches, not necessarily only disciplines.)

6. (a) **Trans-disciplinarity**: here all relevant disciplines are drawn on, as tools, not granted major independent status; instead they are starting points, left behind in the process of dealing with real cases, like in good historiography, good biography, good area studies. My usage here diverges from some authors, but respects the original sense: across, on the other side of, beyond. Söderbaum shares this usage, and cites Passet 1997:2, 'a trans-disciplinary approach ...goes across disciplines, brings them together, and goes beyond them'. Trans-disciplinary approaches are necessary because 'there are no "economic". "social", or "psychological" problems, but just problems', which do not follow disciplinary boundaries (Myrdal 1975: 142).
(b) **Meta-disciplinarity**. 'Meta-' denotes behind, after, beyond, with some connotation of *change of type*. Here we seek case-specific and purpose-specific framing of issues, not standardized disciplinary frames nor even a wide set of them to choose between. See e.g. Stretton (1969).

This gives ten or more cases in all, with six major cases. We can refer to the last five of these, and combinations of them (as commonly found in practice), as ID: a) open- (including sub-), b) cross-, c) mega- (including imperial-), d) super- (including supra-), and f) trans- (including meta-). Multi-disciplinarity is not automatically ID.

Why classify, given the inevitable imperfection of any such list? Because there is remdiable confusion not only between but within authors, even some of the best. Wallerstein himself oscillates between the terms 'multidisciplinarity' and 'inter-disciplinarity' (e.g. on p.47), and nowhere in his book provides a clear terminology. The same seems to apply for both van Nieuwenhuijze and Johnson.

Van Nieuwenhuijze's review of the Institute of Social Studies concluded: 'In being unable--like everyone else--to achieve *true* interdisciplinarity, the Institute's operating pattern shows a range of multidisciplinary formulae, with one or another discipline more or less emphatically in the lead' (1979:67; my italics), hopefully one appropriate to the problem cluster concerned. By "true" he seems to mean more sweeping variants of ID beyond 'open-disciplinarity', for that *is* achieved in various locales. And yet in another study he accepts this open-disciplinarity as ID: 'In upholding our claim to interdisciplinarity.. we in fact lay claim to no more than the systematic attempt to give second thoughts, perhaps a bad conscience, to the person who trusts that his own discipline is all he needs to be a student of development... [to make them] realize the need to look across the fence, to see what colleagues in the other disciplines are trying to do' (1978:19).

Glenn Johnson never uses the term ID until almost the end of his book, and then in derogatory fashion.

> There are people who call themselves interdisciplinarians, implying that they can serve as sources of many different kinds of disciplinary excellence. By and large, interdisciplinarians fail to furnish hard-core excellence from all the disciplines they purport to represent .. [Yet for instance] when a sociologist is required on a subject-matter or problem-solving project, excellence as a sociologist is required. (1986:205).

Johnson's remark applies only to multi- (separate, non-interacting) disciplinary work, where one prefers the best specialists. Thus he confuses inter- and multi-disciplinarity. Few people are multi-, in the sense of having mastered more than one, discipline. Rather more are inter- in the sense of openness, and willingness and ability to interact, communicate, learn. And indeed Johnson himself uses the term MD differently elsewhere:

> It is not asserted here that economists should be multidisciplinarians [i.e. master other disciplines: the meaning he gives to *ID* on p.205]. Instead, it is implied that economists involved in practical problem-solving and subject-matter research should be prepared to accept guidance from the philosophies and the different methodological views and techniques associated with the disciplines to which economists contribute' (Johnson, 1986:4).

They should in other words be interdisciplinary, open to learn from others.

'Bridging capital' - engaging economics in social science ?

Stepping stones come before craft skills in interdisciplinarity

Trans- and meta-disciplinarity place high demands. Albert Hirschman brings concepts from political science and sociology into economics, *and* vice versa, not on the basis of a sweeping manifesto like Becker's 'The Economic Approach', but by sensitive experimentation. Finding out what is helpful is highly skilled craft work. 'There is no master key, no master way of integrating the social sciences; it is a matter of case by case invention essentially This is not satisfying for my colleagues or for younger people' (Hirschman, in Swedberg 1991, p.157). Krugman and Chakraborty argue that Hirschman has correspondingly founded no school, no research program; he has admirers but few disciples.

Besides often being difficult for the ordinary analyst, this situationally sensitive selection and synthesis requires a repertoire of concepts and methods to employ. I suggest that identifiable usable ID frameworks, which link or transcend disciplinary models are important. Frameworks of this type can help to fill some of the roles played by a discipline: to provide shared foci, language and morale; to structure training; to mould public discourse. From such a basis and training some master craftsmen will emerge. Without intermediate stepping stones the leap from disciplinarity becomes too great. And for those who cannot be master craftsmen, worthwhile steps will still have been made to cross- and open-disciplinarity. We are looking for:

> 'a kind of *cognitive boundary object* (Star & Griesemer 1989) facilitating communication across different cultures. Such efforts to construct new discursive objects at the nexus of

scientific and other cultural domains are an important, and often overlooked, dimension of stabilizing scientific knowledge for use in policy' (Jasanoff & Wynne, 1998:37).

Given the special power and insularity of economics, we particularly require frameworks that can fruitfully link economists and other social (and environmental) scientists. Some of them may be inferior as social science to available alternatives, yet superior for this function. Let us briefly consider some candidates. My intention is to raise themes and questions, not make strong judgements.

Disciplinary creep?

The imperial advance of *'public choice' theory* and of rather narrow interpretations of *'rational choice'* into political science, administration and sociology in the past generation has been very significant. They are evidently accessible and popular with many model-oriented social scientists. If taken as offering ideal type models which can help for considering some situations, whether by giving approximations or simply a base-line for seeing how far the situations diverge from the model, they are certainly useful (see e.g. Dunleavy 1991; and the work of Robert Bates and Jon Elster). If they become bridges with only one-way traffic, treated as offering presumptively accurate renditions of nearly all cases, they become disastrous, a degenerate version of ID. (See e.g. the critique by Stretton & Orchard.) They are high-risk approaches, easily misused.

New Institutional Economics is perhaps less imperial, for its roots are in organization theory and law, not only in transaction cost economics (Oliver Williamson, in Swedberg, 1991). While risks remain of reification of ideal types, compared to rational choice theory NIE functions more readily as an arena for two- or more way learning. Therefore its supersession of public choice theory, as main underpinning for the World Bank's 1997 World Development Report on the State and Development, represented progress (Moore, 1998). NIE remains however highly limited, and limiting, in its informational base and assumptions (Harriss et al., eds., 1995), as seen for example in its approach to management of common property resources (Mosse, 1997). For Kurien (1996:20) it shows the futility of trying to graft selected substantive aspects, selected still with priority to analytical convenience above realism, on to a neo-classical base.

In this context, the appearance of a new star in the (World Bank) firmament--'social capital'--has major significance, argue some commentators whose views demand respect. For while one of its main versions, and hence perhaps its perceived 'safeness' in Washington DC, came from the rational choice University of Chicago theorist James Coleman, 'social capital' could be a surprise package that despite its limitations brings more of the real world into the mental worlds of the Bank and even of mainstream economics.

Fruitful confusion? 'Social capital'

Abashed by their weakness in creating sustainable development projects, some World Bank and related economists have sought an explanatory factor to add to their trio of traditional capital goods, human capital, and 'environmental capital'. Impatient with the various different interpretations of 'social capital' in other social studies, some

of the economists think all can be fused (Serageldin & Grootaert, 2000) and then measured. One of the economists concerned remarked that while few World Bank staffers will continue listening if they hear an attack on 'homo oeconomicus', many more will entertain a discussion of 'social capital'. Thus, in the words of a leading development administration thinker, 'social capital' becomes the battering ram to bring social analysis into economic development (a conference statement reported by Desmond McNeill). As remarked by social anthropologist Steve Rayner, 'social capital' seems to some economists to offer a way to talk about the social without yet having to consider society! Concerned with the inelegance of its theorizing, Nobel Prize economists Arrow and Solow (in Dasgupta & Serageldin, eds., 2000) miss this, seeing only the poorness of fit to traditional notions of 'capital'.

Many expectations will not be fulfilled, at least when checked by others: for reliable measurement, aggregation, worldwide generalizations, transferable models, manageable promotion projects. The concept itself might even later disappear. The key question is will economists then withdraw to disciplinarity or will there be a longer term and deeper impact, through the entry of more non-economist staff and of new variables in analysis which may in time demand and legitimate new methodological stances by economists.[8]

More widely than in the World Bank, 'social capital' discourse might be functioning as an ID meeting point and vehicle for bringing more historically aware, less universalistic, more humble thinking into economics. This is not so common that it can be lightly discarded.

Mega-pretensions?

Marxism

In a recent piece in *Development and Change* (1999) Ben Fine provides a well-argued critique of Social Capital theory. An earlier piece gave a similar assessment, albeit somewhat more kindly, of Sen's entitlements approach (Fine, 1998). While I agree with most of Fine's points on the content of 'social capital' ideas, the sociology of knowledge perspective which he uses is reductionist: exclusively how such ideas might fit the current needs of world capitalism. He misses their unruly potential, as a bridge or staging-post in an evolution of thought. In the background of his critiques the implied alternative is a sophisticated Marxism, a continuing ID contender. Marxism's great virtues have centred on its determination to connect across the conventional divisions of thought: to see the social and psychological significances of the commodity form; to highlight the linkage from economic power to politics, neglected in disciplinary social science (even public choice theory): the power of money to buy police, judiciary, legislature and governors; and much more. Its deep decline reflects the failures, intellectual and practical, of megaloid and reductionist super-disciplinary versions. It serves better as a source of prompts than a set of fixed, clumsy frames and models.

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[8] In the mid-1990s the World Bank employed 28 economists for every other social scientist (World Bank, 1996, as reported by Edwards, 1999).

Cultural Theory

In the mid 1990s I participated in a study on human needs and wants, with reference to global climate change, led by the anthropologist and cultural theorist Mary Douglas. This was a part of the Battelle Foundation project on social science approaches to climate change, directed by Steve Rayner (Rayner & Malone, 1998). Very large numbers of social scientists from a range of disciplines were consulted. My hypothesis is that its pay-off and impact may be limited by its domination by the 'cultural theory' created in the 1960s-70s by Douglas and subsequently elaborated and applied by Rayner and Michael Thompson, her students and co-workers. While this theory attempts to provide a super- or mega-disciplinary synthesis of many matters, its simplifying character and grand-theory claims can sometimes become instead a barrier to inter-disciplinary interaction. It becomes perceived as a cult with a set of too-ready answers, rather than a forum where analysts of various backgrounds can find help to pursue their questions, not least by talking with each other. This might apply even to the streamlined and deepened version by Thompson (2000). Promotion of ID via a theory which makes strong claims and is propounded by one school from one discipline can thus be less effective than propagation of a common frame-for-work.

Usable frames for flexible work?

Entitlements analysis seems to encourage open- and cross-disciplinarity: it provides a bridge. In a 1993 paper I looked at how and why this *framework* devised by Amartya Sen for explanatory and policy analysis has attracted attention and been relatively fruitful across a number of disciplines and in inter-disciplinary discussion. This is despite some internal obscurities, misunderstandings about Sen's categories by many users, and even their perhaps rather limited content as social analysis. Apthorpe (1999) declares it economistic, bogus social analysis. Sen is indeed an open-minded economist but strongly cross-disciplinary only in respect of philosophy rather than other social sciences (see his interview in Swedberg 1991; Gasper, 2000b). Yet entitlements analysis has proven suitable to make economists, geographers and others pose relevant questions that take them beyond their inherited frames. It opens not just conversations within economics, but windows to beyond. We should accept the inevitability of many lines and styles of conversations; and, while situating his or her work, praise anyone who generates cross-disciplinary conversation.

A recent example of influence is in the '*environmental entitlements*' work by Leach, Mearns and Scoones (1997a, 1997b, 1999), a team at IDS Sussex drawn from anthropology, human geography and agriculture. They and collaborators from Ghana, India and South Africa report that they found entitlements analysis helpful in forcing them to systematically consider a whole range of connections they would probably otherwise have neglected.

Sen's *capability approach*, adopted by Mahbub Ul Haq as basis for the UN's Human Development work, has functioned in a similar way (Gasper, 1997 & 2000b). By forcefully directing attention to other determinants of quality of life in addition to commodities, it has contributed importantly to broadening development economics and increasing inter-disciplinary co-operation.

Entitlements and capability analysis are examples of flexible formats that yet give considerable help in identifying factors to consider. Also invaluable for ID work, in helping to avoid *a priori* exclusions of factors and issues, are formats for analysing and constructing policy arguments (see e.g. Dunn, 1981; Gasper, 1996). These provide both space and specific prompts to bring in issues. They will help us to ask, in the example we saw earlier, about private education's comparative impacts on nationbuilding, the brain-drain and willingness to work in priority sectors, not only its impact on graduates' earnings.

CONCLUSION

Development studies has relied in considerable part on the case for interdisciplinarity, to justify its own distinctive organizational space. Yet it has often sunk into routine and paid too little attention to the theory and practicalities of ID. One widely sees ID, the interaction between disciplines, confused with multi-disciplinarity (mastery of multiple disciplines, or the mere addition of disciplinary contributions without any substantial mutual influence), or equated to an extreme variant or successor like mega-disciplinarity.

This paper has highlighted and then tried to respond to needs for sharper concepts, attention to the sociology of science, and practicable measures for both shorter- and longer-run progress. We should distinguish multiple modes and purposes of social analysis, as outlined in Section 2, and aim for a complex ecology of the social sciences, such as that sketched above in Sections 3 and 5. In the shorter term, inter-disciplinary situation analysis and cooperation on policy related cases are typically more feasible, as suggested by Johnson and Perkins, and sometimes more important than inter-disciplinary theory building. In the longer-term, multi- and especially inter- disciplinary education are probably essential for better ID in research. Joint degrees, at least involving substantial Minors, should be the norm in social sciences, as Foster-Carter suggests. They raise the readiness and credentials for later ID work, besides providing intellectual resources. Interdisciplinary research should not face the further barrier, beyond the intrinsic difficulty of its greater scale and complexity, of subjection to an MD style of examination by a battery of disciplinary specialists. Their criteria are often inappropriate: demanding maximum elaboration and precision on what is only a sub-aspect of an ID study, as opposed to depth sufficient in terms of the whole inquiry. Alternatively, mono-disciplinary theses, proposals and reports should be exposed to the critical glare of other disciplines. Many of them will be highly vulnerable.

We have to meet in particular the challenge of strengthening effective, enriching, collegial interaction between economists and others. Section 4 tried to diagnose and react to the difficulties. Besides institutional structures, interactive work requires a compatible culture and attractive concrete activities. In a longer run one can hope to soften monogamous bonds of allegiance and identity, but whatever the time perspective

we need intellectual frameworks that open and facilitate inter-disciplinary conversation, as considered in Section 5. The 'avenging angel' or 'salutary' approach to ID -- 'Countering my dear colleague's ignorance and grotesquely crude assumptions about topic X' -- will probably be less effective than this 'Getting to Yes' approach: aiming to jointly generate new activities and insights that transcend and benefit both starting points. The urgency of issues of sustainable development provides one major opportunity for this, which by involving natural scientists and many others keeps the division between economists and other social scientists helpfully in perspective.

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