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What are Academic Disciplines?

Some observations on the Disciplinarity vs.
Interdisciplinarity debate

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Working Paper

Disciplines and Interdisciplinarity

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Introduction

Interdisciplinarity has become a buzzword in scientific debates and it has been identified by many research funding organisations in Europe and the United States as the desirable direction towards which the social sciences should develop themselves, both in terms of teaching and research. For example, Joyce Tait and Catherine Lyall¹ and Anthony Forster², all of them writing on behalf of the ESRC, are very outspoken of the idea of interdisciplinarity and their reports on interdisciplinary research in the UK detail ways of promoting the idea across the social sciences. These and many similar reports in other countries usually take it for granted that 'interdisciplinarity' is a good thing and needs to be encouraged and promoted wherever possible.³

The new interdisciplinarians sometimes point at the problem that academic work generally happens within narrow and possibly arbitrary or artificial disciplinary boundaries, which sometimes prevents academics seeing the close connections of different phenomena and also of the different disciplines. For example, there is the argument that complex discipline-transgressing phenomena are irreducible and that they cannot be understood adequately by using reductionist disciplinary approaches.⁴ Furthermore, the prevalent tendency in most disciplines of increasingly narrow and deep specialisation would make research less relevant to outsiders or society, would foster insularity and imperialism rooted in partial and ideological thinking, would hinder the exchange

¹ Joyce Tait and Catherine Lyall (2001), 'Investigation Into ESRC Funded Interdisciplinary Research', Final Report, *SUPRA*.

² Anthony Forster (2003), 'Report Into the ESRC's Promotion of Successful Interdisciplinary Research', ESRC, *Research Evaluation Committee*.

³ Elizabeth Shove and Paul Wouters (2005), 'Interactive Agenda Setting in the Social Sciences – Interdisciplinarity', *IASS*.

⁴ William H. Newell (2001), 'A Theory of Interdisciplinary Studies', *Issues in Integrative Studies* 19, p. 2; Julie Thompson Klein (2004), 'Interdisciplinarity and Complexity: An Evolving Relationship', *E:CO* 6:1-2, p. 4

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of ideas across disciplines and would ultimately impede the progress of science.⁵ According to this new orthodoxy, scientists should aim to develop fruitful relationships to other disciplines than their own and perhaps even to transcend disciplinary thinking altogether.

At the same time, practising interdisciplinarity is notoriously fraught with difficulties. As Julie Thompson Klein puts it, '[i]nterdisciplinarity is on everyone's agenda; actually implementing it in institutional settings is a more difficult proposition'.⁶ It appears that a key problem with the 'interdisciplinarity' debate is that it is not quite clear how 'disciplinarity' is understood.⁷ For example, John Aram, argues that "[r]ecognizing ambiguities in the concept of 'discipline' foreshadows the challenge of defining interdisciplinarity. Where elements are relatively stable, integrated and autonomous, interaction may be more easily perceived and defined".⁸ This is obviously not the case with disciplines, which continuously change, which are themselves fragmented and heterogeneous, and which interact with other disciplines in many complex ways.

The concept of interdisciplinarity also raises some interesting questions related to the future of science. For example: are disciplines a necessary or an obsolete feature of science?; can the borders of disciplines be redrawn easily or are they of a more permanent nature?; should the boundaries not only between the disciplines, but also between science and society be transformed? In short, in what way should interdisciplinarity change the disciplines involved and the social sciences at large? As the following discussion will show, there are many different possibilities for understanding disciplines and disciplinarity and any particular conception of disciplinarity will lead to rather different conclusions concerning the

⁵ J. Rogers Hollingsworths (1986), 'The Decline of Scientific Communication Within and Across Academic Disciplines', *Policy Studies Journal* 14:3 (March), pp. 422-428; Sayer, Andrew (2001), 'For Postdisciplinary Studies: Sociology and the Curse of Disciplinary Parochialism/Imperialism', in: J. Eldridge, J. McInnes, S. Scott, C. Warhurst and A. Witz (eds), *For Sociology: Legacy and Prospects*, Durham: Sociologypress, pp. 83-91.

⁶ Julie Thompson Klein (1996), *Crossing Boundaries/Knowledge, Disciplinarity, and Interdisciplinarity*, Charlottesville: University of Virginia Press, p. 209.

⁷ Julie Thompson Klein (2005), *Humanities, Culture and Interdisciplinarity/The Changing American Academy*, New York: State University of New York Press, p. 219.

⁸ John Aram (2004), 'Concepts of Interdisciplinarity: Configurations of Knowledge and Action', *Human Relations* 57:4, p. 381.

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value of disciplines and the practicality or possibility of interdisciplinarity and the general direction of the social sciences.

Although the idea of 'interdisciplinarity' is certainly a very compelling one, it also appears that the term is so loosely and insufficiently defined as to make it almost meaningless. Mattei Dogan and Robert Pahre therefore suggest to banish the term altogether.⁹ Interdisciplinarity is now made up by a range of very different concepts like crossdisciplinarity, multidisciplinarity, supradisciplinarity or transdisciplinarity, which are often talked about as if they were just one. Even if there is agreement on the terms, it still remains unclear what is to be accomplished. Furthermore, what would a social scientist have to do in order to be called interdisciplinary: get funding from more than one research council?; collaborate with people in the natural sciences or perhaps just with other social scientists of a different specialisation?; or merely read some books outside the own discipline? Would it be even possible *not* to be interdisciplinary in some form or way, or are there any obvious criteria for what exactly distinguishes interdisciplinary research from disciplinary research?

The most general definition of 'interdisciplinarity' as proposed by Joe Moran is: 'any form of dialogue or interaction between two or more disciplines',¹⁰ which is very vague. At least it captures what most people have in mind when they hear 'interdisciplinarity', which is essentially that interdisciplinarity means crossing disciplinary boundaries. However, in order to be able to cross a boundary there need to be boundaries in the first place and one needs to know where these boundaries are.¹¹ In other words, the main problem with the notion of 'interdisciplinarity' seems to be that many people who use it do not make explicit what exactly they understand under a discipline or when exactly a disciplinary boundary is crossed with what kind of consequence. This means any useful definition of interdisciplinarity would thus require a workable definition of academic disciplines first, which is certainly not easy. Simply listing recognised

⁹ Mattei Dogan and Robert Pahre (1990), *Creative Marginality/Innovation at the Intersections of Social Science*, Boulder, CO: Westview Press, p. 65.

¹⁰ Joe Moran (2001), *Interdisciplinarity: The New Critical Idiom*, London: Routledge, p. 16.

¹¹ Lynda Hunt (1994), 'The Virtues of Disciplinarity', *Eighteenth Century Studies* 28:1, pp. 1-7.

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disciplines is not a solution, as the number of disciplines changes over time. This fact would require some explanation why a field of academic study can or might not be labelled a 'discipline' and how one has arrived at a particular list.

This paper will look at disciplines and disciplinarity through the lenses of certain academic disciplines including philosophy, anthropology, sociology, history, management and education. These different perspectives shall be considered as 'ideal types' and not as 'official' views by the respective disciplines or any particular members of these disciplines. Rather it is assumed that the disciplines just provide some general patterns or paradigms for analysis, which are applied to the phenomenon of academic disciplines. It will then become quite apparent that they have many dimensions and layers, which are usually not sufficiently explored and distinguished in the interdisciplinarity debate. By paying more attention to these multiple dimensions and the complexity of disciplinarity, the arguments and positions may be better discernable and a better understanding of the debate on interdisciplinarity may be gained from it.

The Problem of Defining Disciplines

It has been pointed out by many researchers of higher education that the concept of a discipline is not a straightforward one.¹² The disciplines are so different from each other that it is hard to come up with a concise definition that would fit all of them to the same degree. A 'discipline' can be many things at the same time and it is worthwhile to look closely at the various meanings of the word. Therefore many academic investigations of the concept of 'disciplinarity' start off with an exploration of the etymology of the word discipline.¹³ This seems to be a useful

¹² Tony Becher and Paul R. Trowler (2001), *Academic Tribes and Territories*, Buckingham: The Society for Research into Higher Education and Open University Press, p. 41.

¹³ E.g. Bryan Turner (2001), 'Discipline', *Theory, Culture and Society* 23, pp. 183-186; Joe Moran (2002), *Interdisciplinarity: The New Critical Idiom*, London: Routledge, p. 2; Julie Thompson Klein (2006), 'A Platform for a Shared Discourse for Interdisciplinary Education', *Journal of Social Science Education* 5:2, pp. 10-18; J.M. Balkin (1996), 'Interdisciplinarity as Colonization', *Washington and Lee Law Review* 949; Marietta Del Favero (2002), 'Academic Disciplines', *Encyclopaedia of Education*.

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exercise as the word has clearly retained a strong connection to its etymological roots.

The term 'discipline' originates from the Latin words *discipulus*, which means pupil, and *disciplina*, which means teaching (noun). Related to it is also the word 'disciple' as in the disciples of Jesus.¹⁴ A dictionary definition will give a whole range of quite different meanings of the term from training to submission to an authority to the control and self-control of behaviour.¹⁵ As a verb it means training someone to follow a rigorous set of instructions, but also punishing and enforcing obedience. Important is 'military discipline' in the sense of the drill in the use of weapons and strict obedience to military commands. Bryan Turner has also pointed at the ecclesiastical meaning, which refers to the order maintained in the church, and at the medical meaning of 'discipline' as a medical regimen imposed by a doctor on a patient to the patient's benefit.¹⁶ It follows that the academic discipline can be seen as a form of specific and rigorous scientific training that will turn out practitioners who have been 'disciplined by their discipline' for their own good. In addition, 'discipline' also means policing certain behaviours or ways of thinking. Individuals who have deviated from their 'discipline' can be brought back in line or excluded.

As a result, there is an important moral dimension to 'discipline' that defines how people should behave or think. Michel Foucault has famously interpreted 'discipline' as a violent political force and practice that is brought to bear on individuals for producing 'docile bodies' and minds. In this process of disciplining for the general purpose of economic exploitation and political subjugation the 'disciplines' do not remain external to the subject, but become increasingly internalised.¹⁷ Although Foucault uses the term 'discipline' in a very general and also fairly specific sense, it clearly includes the academic disciplines and their contributions to bringing about 'discipline' in society.¹⁸ The disciplined individual

¹⁴ J.M. Balkin (1996), 'Interdisciplinarity as Colonization', *Washington and Lee Law Review* 949.

¹⁵ Oxford English Dictionary, 'Discipline', *Online Edition*, available at <<http://dictionary.oed.com>>, accessed 23 February 2009).

¹⁶ Bryan Turner (2001), 'Discipline', *Theory, Culture and Society* 23, pp. 183.

¹⁷ Michel Foucault (1991), *Discipline and Punish/The Birth of the Prison*, London: Penguin.

¹⁸ Compare Foucault's work on madness and medicine.

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accepts the external rationality and values as one's own, which means open repression is no longer needed. For Foucault disciplining is thus a process aimed at limiting the freedom of individuals and as a way of constraining discourses.¹⁹ Disciplines then have to be considered to be considerable barriers to free thinking and an obstacle to more self-governed subjectivation, which became the focus of Foucault's later work.²⁰

The term 'academic discipline' certainly incorporates many elements of the meaning of 'discipline' discussed above. At the same time, it has also become a technical term for the organisation of learning and the systematic production of new knowledge. Often disciplines are identified with taught subjects, but clearly not every subject taught at university can be called a discipline. There is more to disciplines than the fact that something is a subject taught in an academic setting. In fact, there is a whole list of criteria and characteristics, which indicate whether a subject is indeed a distinct discipline. A general list of characteristics would include: 1) disciplines have a particular object of research (e.g. law, society, politics), though the object of research maybe shared with another discipline; 2) disciplines have a body of accumulated specialist knowledge referring to their object of research, which is specific to them and not generally shared with another discipline; 3) disciplines have theories and concepts that can organise the accumulated specialist knowledge effectively; 4) disciplines use specific terminologies or a specific technical language adjusted to their research object; 5) disciplines have developed specific research methods according to their specific research requirements; and maybe most crucially 6), disciplines must have some institutional manifestation in the form of subjects taught at universities or colleges, respective academic departments and professional associations connected to it. Only through institutionalisation are disciplines able to reproduce themselves 'from one generation to the next by means of specific educational

¹⁹ David Bridges (2006), 'The Disciplines and the Discipline of Educational Research', *Journal of Philosophy of Education* 40:2, p. 268.

²⁰ The theme is explored by Foucault in *Technologies of the Self*. Michel Foucault (1988), 'Technologies of the Self', in: L.H. Martin, H. Guttman and P. Miller (eds), *Technologies of the Self*, Amhurst, MA: University of Massachusetts Press.

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preparation'.²¹ A new discipline is therefore usually founded by the way of creating a professorial chair devoted to it at an established university.

Not all disciplines have all of the aforementioned six characteristics. For example, English literature has the problem that it lacks both a unifying theoretical paradigm or method *and* a definable stable object of research, but it still passes as an academic discipline.²² Generally it can be said that the more of these boxes a discipline can tick, the more likely it becomes that a certain field of academic enquiry is a recognised discipline capable of reproducing itself and building upon a growing body of own scholarship. If a discipline is called 'studies', then it usually indicates that it is of newer origin (post Second World War) and that it may fall short of one or more of the abovementioned characteristics. This would be typically lack of theorisation or lack of specific methodologies, which usually diminishes the status of a field of research. These 'studies' disciplines can either aim at remaining 'undisciplined', as women's studies did in the 1970s, or they can engage in the process of their disciplinarisation and institutionalisation.

Furthermore, although there can be no true hierarchy in the world of science, as each discipline can claim expert knowledge in its own domain, not all disciplines are created equal. Some disciplines would be considered to be 'more useful, more rigorous, more difficult, or more important than others'.²³ There are also tremendous differences between the disciplines with respect to their overall standing within universities, which can be seen by the number of students and the amount of research money they can attract and the overall resources that are allocated to them by universities in terms of teaching personnel, teaching hours, and equipment. Bigger departments with more staff and more expensive equipment tend to have greater influence within universities than smaller and less equipped departments. In the UK this means that vice chancellors are usually

²¹ Leo Apostel quoted in Sinclair Goodlad (1979), 'What Is an Academic Discipline?' in: Roy Cox (ed.), *Cooperation and Choice in Higher Education*, London: University of London Teaching Methods Unit, p. 11.

²² Terry Eagleton (1983), *Literary Theory/An Introduction*, Oxford: Blackwell, pp. 197-198.

²³ Douglas W. Vick (2004), 'Interdisciplinarity and the Discipline of Law', *Journal of Law and Society* 31:2, p. 172.

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recruited from the science and technology disciplines on the grounds of greater managerial experience.²⁴ In addition, some newer disciplines like IT and management do quite well because of their great relevance to the business world and therefore greater attractiveness for students, while other more established disciplines like literature may have a hard time averting the fate of a slow death.²⁵

The psychologist Anthony Biglan has developed a classification system for disciplines according to the beliefs held about them by their members, which seeks to further explain some of the differences between disciplines. It most generally divides disciplines into 'hard' or 'paradigmatic' disciplines and 'soft' or 'pre-paradigmatic' disciplines, which also points at the divide between natural sciences and humanities/social sciences.²⁶ In addition, Biglan distinguishes between disciplines that are 'pure' or primarily theoretical (e.g. mathematics) and disciplines that are 'applied' (e.g. engineering), and thirdly, disciplines that engage with 'living systems' (e.g. biology) and those with 'non-living systems' (e.g. history). Generally speaking, the 'hard' natural sciences would be more respected, natural scientists would be more focused on producing journal articles and would enjoy a greater degree of social connectedness in their specialist field. In contrast, the 'soft' sciences would be less respected, their practitioners would be more focused on teaching and publishing monographs and would be far more loosely connected. The Biglan classification thus combines the epistemological and the cultural dimension of disciplines and it is still considered to be valid in the way it 'culturally' distinguishes disciplines.²⁷ A similar classification to Biglan's has been suggested by the higher education researcher Tony Becher. He

²⁴ Tony Becher (1994), 'The Significance of Disciplinary Differences', *Studies in Higher Education* 19:2, p. 159.

²⁵ Alvin Kernan (1990), *The Death of Literature*, New Haven: Yale University Press.

²⁶ Anthony Biglan (1973), 'The Characteristics of Subject Matters in Different Academic Areas', *Journal of Applied Psychology* 57, pp. 195-203.

²⁷ Marlene Schommer-Aikins, Orpha K. Duell and Sue Barker (2003), 'Epistemological Beliefs Across Domains Using Biglan's Classification of Academic Disciplines', *Research in Higher Education* 44:3 (June), pp. 352-353.

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introduced the distinction between 'rural' and 'urban' disciplines, which refers to the variance in pace in and social cohesion between disciplines.²⁸

Finally, it is quite revealing that a lot of 'pseudo-militaristic' and geopolitical metaphors have been used in the disciplinarity vs. interdisciplinarity debate, either to justify or to denigrate interdisciplinary research.²⁹ One might think of the terms 'borders', 'boundaries', 'territories', 'kingdoms', 'fiefdoms', 'silos', 'empire building', 'federalism', 'migration' and so on. In some of these debates knowledge is almost treated like a geographic territory over which one can fight and which can be controlled by 'disciplinary factions'. In reality, there are lots of overlapping jurisdictions and constantly shifting and expanding knowledge formations. This makes the metaphor of 'knowledge territories', which implies some stable or identifiable topography and some sort of zero-sum game over its distribution, sometimes quite misleading. The geopolitical metaphors are therefore used in this paper in the conscience that they are only metaphors, but also useful ones for making the highly abstract concepts of knowledge and disciplines more tangible. The following sections will now approach disciplinarity from various paradigmatic angles. The first perspective on disciplines discussed below will be the philosophical view.

1. The Philosophical Perspective: Unity and Plurality

General Outlook

For a philosopher the question of academic disciplines represents itself as a problem of the organisation of knowledge and how knowledge relates to reality. Philosophers ever since Plato have believed that the oneness of the world could be matched by the unity of knowledge about the world. This means philosophers often had some inclination of creating a unified theory of reality and knowledge –

²⁸ Tony Becher (1981), 'Towards a Definition of Disciplinary Cultures', *Studies in Higher Education* 6:2, pp. 109-122; Tony Becher (1994), 'The Significance of Disciplinary Differences', *Studies in Higher Education* 19:2, pp. 151-161.

²⁹ Graham Huggan (2002), 'Mixing Disciplines: The Anxiety of Interdisciplinarity', *Postcolonial Studies* 5:3, p. 256.

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an inclination that was discredited in the 20th century as metaphysical thinking. Since Kant philosophy has moved away from metaphysics and instead focused on the critique of knowledge, or as it is now called on epistemology, which deals with the problems of the nature of knowledge and of truth. Disciplinarity and interdisciplinarity are intrinsically connected to the problem of the correspondence or non-correspondence of knowledge to an objective reality and the problem of the unity or disunity of all knowledge.

From a more traditional philosophical perspective the academic disciplines are simply particular branches of knowledge and taken together they form the whole or unity of knowledge that has been created by the scientific endeavour. The disciplines would therefore remain compatible to each other and could be in principle integrated into an overarching theory or system of knowledge. In Ancient times education and philosophy was interdisciplinary (or rather pre-disciplinary) in the sense that philosophers did not accept any boundaries or limitations to the validity of the truths they uncovered by the way of thinking. For Plato philosophy was a unified science and the philosopher was the person capable of synthesizing all knowledge.³⁰ Any knowledge above the level of mere opinion fell automatically into the jurisdiction of philosophy and could be judged by its own methods. Aristotle was the first to introduce a division of knowledge by dividing it into theoretical and practical enquiry³¹ and thus balancing 'pure' thinking (rhetoric, logic, mathematics, ethics) with the observation of nature (physics, astronomy). This first division of 'philosophical' knowledge prepared the way for the uncountable further divisions of knowledge into more and more specialised fields of science. The unity of knowledge was apparently lost irreversibly.

In the early 20th century a new philosophical school of thought under the name 'logical positivism' emerged. The logical positivists set out to restore the

³⁰ Klein, Julie Thompson (1990), *Interdisciplinarity/History, Theory, and Practice*, Detroit: Wayne State University Press, p. 19; Julie Thompson Klein (2005), *Humanities, Culture and Interdisciplinarity/The Changing American Academy*, New York: State University of New York Press, p. 14.

³¹ Julie Thompson Klein (2005), *Humanities, Culture and Interdisciplinarity/The Changing American Academy*, New York: State University of New York Press, p. 15.

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unity of science and knowledge that was undermined by the rapid proliferation of academic disciplines and research agendas. It originated in Germany and Austria of the early 1920s and was for many decades the dominant strand in the philosophy of science, which it firmly established as a subdiscipline of philosophy.³² The logical positivists claimed that science is a cumulative process based on the objective observability of nature. Logical positivism views science to be driven by empirical observation guided by rationalism or logical reasoning. They aimed to define 'the scientific method' and promoted the idea of the verifiability of knowledge and theories. Some of the logical positivists were committed to the idea of a unified science based on the development of a universal scientific language (either a phenomenistic or physicalistic language).³³ Although formally rejecting Kant's 'a priori' knowledge (especially the synthetic a priori), the logical positivists believed in the existence of (foundational) nonsynthetic a priori principles and the possibility of objective scientific knowledge.³⁴ All of the academic disciplines would therefore share the same universal scientific rationality. From the perspective of logical positivism one might thus expect the number and content of academic disciplines to remain relatively stable, as the rationale for dividing knowledge in the first place would be unchanged.³⁵

Logical positivism came under attack from various sides, notably, for example, from Karl Popper who opposed the idea of verifiability and the inductive methodology of the logical positivists, and from analytical philosophy that emerged after the Second World War and which leaned more towards naturalism, or the idea that all observable effects have natural causes, opposing the logical a priori claimed by the logical positivists. A fundamental development in modern philosophy of science has been rise of the descriptive history of science as an alternative to the essentially normative philosophy of science. Thomas Kuhn

³² Michael Friedman (1999), *Reconsidering Logical Positivism*, Cambridge: Cambridge University Press, pp. XI-XIII.

³³ *Ibid.*, p. 145.

³⁴ *Ibid.*, p. 10.

³⁵ Robert Pahre (1996), 'Patterns of Knowledge Communities in the Social Sciences – Navigating Among the Disciplines: the Library and Interdisciplinary Inquiry', *Library Trends* (Fall).

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argued in his famous 1962 book *The Structure of Scientific Revolutions* that science is not a cumulative process as claimed both by the logical positivists and Popperians, but rather a succession of scientific revolutions that from time to time fundamentally reorganise scientific fields or disciplines.³⁶ Kuhn coined the term 'paradigm' to express the idea that disciplines are organised around certain ways of thinking or larger theoretical frameworks, which can best explain empirical phenomena in that discipline or field. Results that do not fit into the prevailing paradigm are somehow excluded, for example by limiting the domains of theories, or treated as anomalies the ongoing attempted resolution of which shape its development. Thus paradigms shape the questions scientists ask and also the possible answers they can get through their research. Once the problems with the paradigm become obvious as too many exceptions remain unexplained, a new paradigm that is able to explain more phenomena and / or that is in some sense more efficient might replace the previous one.

Though Thomas Kuhn did not rule out the possibility of objective scientific truth, his work gave some new impetus to the older debate started by Karl Mannheim's 'sociology of knowledge', which deals with the impact of ideology on science and the supposed 'social construction of truth'. The controversial Austrian philosopher of science Paul Feyerabend only saw weak links between the body of accepted science and an objective reality and argued vehemently against the idea of a 'scientific method' that could reliably produce truth about the world. Instead he proposed an anarchical science based on the motto of 'anything goes' in terms of method.³⁷ Scientists should proceed as they see fit without the need of any overarching framework for what may or may not count as science proper. He also affirmed a version of a social construction of knowledge thesis and claimed the knowledge generated by the various scientific disciplines would be incompatible. The scientific disciplines would have already moved so

³⁶ Thomas Kuhn (1962), *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press.

³⁷ Paul Feyerabend (1984), *Against Method/Outline of an Anarchistic Theory of Knowledge*, London: Verso.

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far apart from each other that they would be now 'incommensurable', or so different that they cannot even be compared.

Postmodernists have, even more controversially, gone further than either Kuhn or Feyerabend when they claimed that all knowledge would be just a social construction and would be necessarily tainted by societal power arrangements, which they serve. The whole concept of scientific truth would be therefore historically contingent and the product of discourses and of prevailing rationalities. According to a radical social constructionist perspective scientific truth does not refer to anything other than itself and the (historically contingent) processes of its creation. Lyotard in *The Postmodern Condition*³⁸ argued that a discipline could be understood as a specific practice, with rules that determine which kind of statements are accepted as true or false within that particular discourse. Lyotard interprets this practice as a Wittgensteinian 'language game' and claims that no formal language game can be universal and consistent, or in other words there cannot be an all-encompassing language game for science.³⁹ On this view scientific progress can only occur within the boundaries of disciplinary language games that compliment each other, but which cannot be in principle combined or merged.

Social constructionists are often less interested in the product of science or the established knowledge itself, than in the particular methods and practices that are used to acquire new knowledge, which they feel are contingent. For example, there have been many ethnographic studies on laboratory research suggesting an element of arbitrariness with which experimental results are interpreted and scientific 'facts' are established.⁴⁰ Furthermore, social constructionists have been interested in the practice of academic peer review, which is interpreted to be primarily a means of policing academic discourses and of ensuring their overall

³⁸ Jean-Marie Lyotard (1984), *The Postmodern Condition/A Report on Knowledge*, Manchester: Manchester University Press.

³⁹ *Ibid.*, pp. 41-43.

⁴⁰ Most importantly Bruno Latour and Steve Woolgar (1979), *Laboratory Life: the Social Construction of Scientific Facts*, Los Angeles: SAGE.

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coherence (in contrast to ensuring the correspondence to an objective reality).⁴¹ From this perspective scientific knowledge is divided and created partly for the purpose of serving the interests of the respective knowledge communities. The different rationalities and methodologies (paradigms) used by these knowledge communities (disciplines) would make the disciplinary knowledges incommensurable and would put serious limits to even the possibility of interdisciplinarity. At the same time, social constructionists often wish to undermine disciplinary boundaries and authorities by emphasizing the artificiality and contingency of these boundaries.

Special Insights

The academic disciplines reflect the problem that our knowledge of the world is divided into a larger number of branches. The logical positivists tried to restore the unity of knowledge by appealing to fundamental a priori principles of scientific rationality that would be shared across all scientific disciplines. The later philosophy of science rejected such 'foundationalism', or the idea that all knowledge needs to be based on the belief in some universal and unchanging principles. This move towards anti-foundationalism opened the way to a position of the relativism of scientific truth. For social constructionists and postmodernists alike the academic disciplines would be seen as discourses that are created and maintained for serving special interests without actually referring to some objective discoverable reality. The disciplines would be simply incommensurable and any efforts of overcoming disciplinary divisions would be a futile exercise, as the disciplines operate on the basis of completely incompatible rationalities and methodologies that cannot be bridged in a meaningful way.

Social constructionism has been a very popular and influential position in parts of the social science community, perhaps because it involves a social science take on what scientists and scholars do. But it has always faced severe criticism as an account of the nature of knowledge and truth. So-called 'analytic' philosophers and especially philosophers of science, who plausibly constitute

⁴¹ Mario Biagioli (2002), 'From Book Censorship to Academic Peer Review', *Emergences* 12:1, pp. 11-45.

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mainstream philosophy, tend to regard social constructionism as incoherent,⁴² and argue principally, if not entirely, over how best to refute it.⁴³ Natural scientists have been particularly scathing in their rejection of it as an account of their activities.⁴⁴ Nonetheless, there are mainstream philosophers that are not completely dismissive. One prominent critic of social constructionism is the philosopher Ian Hacking, who has analysed the argumentation of the two main factions in the 'science wars', social constructionists and of the naturalists/realists, in detail.⁴⁵ Although the general thrust of his argument is critical, Hacking admits that he is nonetheless ambivalent on the issue of social construction.⁴⁶ Hacking inclines to the view that constructionism and naturalism may be incommensurable positions that may never meet.⁴⁷ Other philosophers like Stanley Fish, in contrast, have tried to bridge the divide of the positions by arguing that something can be both socially constructed and real and that social constructionism does not need to reject the existence of an objective reality.⁴⁸

Along those lines a new school of thought emerged in the late 1980s, which calls itself 'social epistemology' and which tries to connect positivism and social constructionism by looking at the interaction of reality and various knowledge communities researching aspects of reality. Knowledge production is viewed as a social process, but also as a process that is not independent of an external reality to which any knowledge needs to refer to. In effect, social epistemology, as

⁴² John R. Searle (1995), *The Construction of Social Reality*, New York: Simon and Schuster, ch. 7-9; Nelson Goodman (1996), 'Notes on the Well-made World', in: P. J. McCormick (ed.), *Starmaking: Realism, Anti-realism, Irrealism*, Cambridge, MA: MIT Press, pp. 151-159; André Kukla (2000), *Social Constructivism and the Philosophy of Science*, London: Routledge; Nola, Robert and Gürol Irzik (2003). 'Incredulity Towards Lyotard: A Critique of a Postmodernist Account of Science and Knowledge', *Studies in the History and Philosophy of Science* 34, pp. 391-421; Boghossian, Paul (2006), *Fear of knowledge*, Oxford: Oxford University Press.

⁴³ Common lines of argument proceed from the apparently self-defeating nature of the proposition that all facts are social constructs, the apparent contradiction posed by cases where different societies construct mutually contradictory propositions as true, and how to construe time periods, such as the age of the dinosaurs, when no societies were around to construct any facts about them.

⁴⁴ Steven Weinberg (2001), *Facing up: Science and its Cultural Adversaries*, Cambridge, MA: Harvard University Press.

⁴⁵ Ian Hacking (1999), *The Social Construction of What?*, Cambridge, MA: Harvard University Press.

⁴⁶ *Ibid.*, p. 99.

⁴⁷ *Ibid.*, p. 31.

⁴⁸ Stanley Fish (1996), 'Professor Sokal's Bad Joke', *The New York Times*, 21 May.

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argued by Steve Fuller, is able to explain some of the biases in knowledge production without giving up the belief in the possibility of a normative epistemology that can guide or enhance scientific truth-seeking.⁴⁹ Although the disciplines would be socially constructed and thus to some degree contingent, they are also epistemically efficient in producing new knowledge and in evaluating knowledge claims. More recently David Bridges has made the argument that disciplines not only make a community of arguers possible, but also enhance the credibility of scientific research by maintaining the discipline-specific rigour of inquiry, which would be lost in a postdisciplinary science.⁵⁰ Stanley Fish even claims 'being interdisciplinary – breaking out of the prison houses of our various specialties to the open range first of a general human knowledge and then of the employment of the knowledge in the great struggles of social and political life – is not a possible human achievement.'⁵¹ Breaking down the existing authoritative structures that legitimise knowledge would only result in the establishment of new divisions and new authorities. For Fish interdisciplinarity is an attack on disciplinary boundaries and hierarchies that is bound to fail, not only politically, but also epistemologically.

How Relevant?

The philosophical perspective on disciplinarity and disciplinary discourses is only a side show in the overall interdisciplinarity debate, as the epistemological dimension and implications of disciplinarity or interdisciplinarity are rarely considered.⁵² Philosophers of science have moved away from foundationalist theories and have recently begun to focus more on the interaction of epistemic and social practices. Few philosophers would view the organisation of science in the current disciplines with their current boundaries to have been an inevitable and necessary result of scientific progress. Disciplinary boundaries exist because they create some coherence in terms of theories, concepts and methods that

⁴⁹ Steve Fuller (1991), *Social Epistemology*, Indianapolis: Indiana University Press, pp. 24-30.

⁵⁰ David Bridges (2006), 'The Disciplines and the Discipline of Educational Research', *Journal of Philosophy of Education* 40:2, pp. 259-272.

⁵¹ Stanley Fish (1989), 'Being Interdisciplinary Is So Very Hard to Do', *Profession* 89, pp. 15-22.

⁵² Julie Thompson Klein (1990), *Interdisciplinarity/History, Theory, and Practice*, Detroit: Wayne State University Press, p. 109.

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allow the testing and validation of a hypothesis according to agreed rules. These rules are different from discipline to discipline making them to some extent incompatible. Therefore it can be argued that '[e]pistemology constrains cross disciplinary synthesis'.⁵³ One can argue that there need to be some rules for what can count as knowledge and as universal rules do not seem to be on the horizon, disciplines will have to continue governing the production of knowledge. Disciplines and the disciplinary organisation of knowledge could turn out to be 'a necessary evil of knowledge production', as Steve Fuller argues.⁵⁴

2. The Anthropological Perspective: Culture and Tribes

General Outlook

Modern anthropology is the study of human nature as it manifests itself in culture and civilisation. It is an inherently interdisciplinary field because it is both grounded in the natural sciences (physical anthropology) and the humanities (cultural anthropology) with rather unclear boundaries. According to the American anthropologist Clifford Geertz, the subject matter and practice of anthropology was always difficult to define. He argues that "[a]nthropology, or anyway social or cultural anthropology, is in fact rather something more that someone picks up as one goes along year after year trying to figure out what it is and how to practise it than something one has instilled in one through 'systematic method to obtain obedience' or 'formalized train[ing] by instruction and control' ".⁵⁵ Thus anthropology is more identified with the act of practising it rather than the existence of a unifying paradigm or research agenda.

However, there is a well established anthropological tradition and a certain kind of anthropological thinking. The comparative work of the early period of

⁵³ Robert Pahre (1996), 'Patterns of Knowledge Communities in the Social Sciences – Navigating Among the Disciplines: the Library and Interdisciplinary Inquiry', *Library Trends* (Fall).

⁵⁴ Steve Fuller (2003), 'Interdisciplinarity: The Loss of Heroic Vision in the Marketplace of Ideas', *Interdisciplines.org* [website], <<http://www.interdisciplines.org/interdisciplinarity/papers/3>> (accessed 05 January 2009).

⁵⁵ Geertz, Clifford (1995), *After the Fact: Four Decades, Two Countries, One Anthropologist*, Cambridge, MA: Harvard University Press, p. 97.

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modern anthropology, which juxtaposes 'primitive' and 'civilised' societies, has earned cultural anthropology a high reputation and has firmly established it as a distinct academic discipline in the late 19th century. Anthropologists have demonstrated quite successfully that modern and apparently primitive cultures share many cultural characteristics and that apparently very similar groups or cultures might differ significantly. It is generally held that human nature and human culture has many universal features that can be discovered in any context of society or in any civilisation. More recently anthropologists have shifted their focus more towards understanding cultural practices in modern societies, taking into account processes of globalisation and growing contact between societies and cultures.⁵⁶ This has brought anthropologists in direct competition with sociologists. There are areas of anthropology and sociology that clearly overlap and the demarcation of these disciplines at these fringes is hardly possible.

A main criterion for distinguishing anthropology from sociology is the use of the method of ethnography that anthropologists established first. Ethnography can be described as the observation of cultures by participating in cultural groups and practices.⁵⁷ An anthropologist would analyse academic disciplines in terms of the cultural practices that create and maintain them. The focus is on how academic disciplines are practised by people who call themselves academics or scientists. These practices would be linked to cultural practices and structures that anthropologists consider to be universal. One would then arrive at the conclusion that disciplines are a form of social segmentation that resists an overarching authority. Their practitioners belong to different 'academic tribes' inhabiting and defending different 'knowledge territories', distinguishing themselves through self-created cultural practices and specific values.⁵⁸ Every discipline would have to be considered as part of larger cultural groupings (academia, nations, civilizations) and also as a cultural microcosm that manifests

⁵⁶ Pina-Cabral, João (2004), 'The Future of Social Anthropology', *Social Anthropology* 13:2 (June), pp. 119-128.

⁵⁷ Marilyn Strathern (2004), *Partial Connections*, Walnut Creek, CA: AltaMira Press, pp. 7-11.

⁵⁸ Tony Becher (1994), 'The Significance of Disciplinary Differences', *Studies in Higher Education* 19:2, pp. 151-161; Tony Becher and Paul R. Trowler (2001), *Academic Tribes and Territories*, Buckingham: The Society for Research into Higher Education and Open University Press.

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itself in the existence of disciplinary academic departments and (national) disciplinary associations.

An ethnographer of academic cultures would naturally focus on a particular community (an academic association, a university or even a department) in a particular nation or society in order to understand its unique characteristics such as particular practices and sets of values, maybe in comparison to another discipline or another cultural setting. The anthropologist would be able to find numerous cultural differences comparing one disciplinary academic community in one country to an academic community of the same discipline in a different country. British sociology, for example, differs distinctly from sociology in Germany, France and the US in terms of emphasis, theories, methods and scientific writing. It is firmly established that there are different national research cultures that largely affect how science and disciplines are practised in different countries.⁵⁹

Special Insights

Understanding academic disciplines in terms of cultural practices offers many interesting insights. The anthropological view clearly disenchant the practices of knowledge production and also the practitioners. A comparison of different 'academic tribes' shows that there are substantial cultural differences, which appear to be arbitrary – at least to an outsider. Like in all other social groups, group identity is maintained primarily through the distinction between 'them' and 'us'. In order to belong to a certain group one needs to speak the same language, participate in the social life of the group and to share the same beliefs. For a further strengthening of group identity social groupings will develop numerous other distinctive cultural features that make it easy to identify outsiders and that make it difficult for outsiders to join the group. In fact, outsiders are often treated with suspicion, if not outright hostility, which ensures that different tribes do not mix and remain separate. The sociologist Burton R. Clark joked in the 1960s that 'Men of the sociological tribe rarely visit the lands of the physicists and have little

⁵⁹ Tony Becher (1981), 'Towards a Definition of Disciplinary Cultures', *Studies in Higher Education* 6:2, p. 116; Richard Whitley (2000), *The Intellectual and Social Organization of the Sciences*, Oxford: Oxford University Press, pp. XXX-XXXI.

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idea of what they do over there. If the sociologists were to step into the building occupied by the English department, they would encounter the cold stares if not the slingshots of the hostile natives.⁶⁰

In academia disciplinary languages are developed at least in part with the goal of protecting knowledge and disciplinary identity from outside infringement. If knowledge would be universally understandable and easily available for everyone, the specialists in the disciplines would lose their authority and influence as the most important interpreters of their discipline's accumulated knowledge. In extreme cases such as the 'discipline' of nuclear strategy as it emerged in the 1950s knowledge can become largely esoteric and debates might be so full of technical terms and jargon that they would be only understandable to a small elite group. The use of jargon and technical language can of course also have the function, according to social sciences critic Stanislaw Andreski, to disguise 'a paucity of new ideas' and elevate 'ponderous restatements of the obvious' to the level of 'science'.⁶¹

Disciplines that consist of a tightly-knit group of scholars with a high degree of agreement about methods and content will have a much stronger identity with very well defined borders to other disciplines compared to disciplines that are more loosely organised and that exhibit a low degree of coherence.⁶² The 'hard' natural sciences with their well-defined boundaries would find it much easier to cooperate with scientists of other disciplines or fields than the 'soft' sciences, which have far less defined boundaries and which are therefore more penetrable and open to criticism.⁶³ Thus the greater the intellectual distance, the more likely would be a consensus or an integration of knowledge.⁶⁴

Academics, who leave their tribe and cross boundaries, might find themselves 'expelled', 'cut off' and 'intellectually homeless'. The anthropologist

⁶⁰ Tony Becher and Paul R. Trowler (2001), *Academic Tribes and Territories*, Buckingham: The Society for Research into Higher Education and Open University Press, p. 45.

⁶¹ Stanislaw Andreski (1974), *Social Sciences as Sorcery*, London: Penguin, p. 11.

⁶² Tony Becher and Paul R. Trowler (2001), *Academic Tribes and Territories*, Buckingham: The Society for Research into Higher Education and Open University Press, p. 59.

⁶³ Lisa Lattuca (2001), *Creating Interdisciplinarity/Interdisciplinary Research and Teaching among College and University Faculty*, Nashville, TN: Vanderbilt University Press, p. 32.

⁶⁴ *Ibid.*, p. 31.

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Marilyn Strathern summarizes this tendency in the following words: 'one knows one is in an interdisciplinary context if there is resistance to what one is doing'.⁶⁵ As a result, academic tribes, especially those with less tradition, strive for developing a strong cultural identity that allows them to prosper. It is definitely in the self-interest of a disciplinary group to keep its members in line and to uphold disciplinary purity. Academic tribes will therefore eagerly protect their knowledge and their methods by adding cultural features that are difficult to understand or to copy for outsiders. Anthropologists would argue that the desire of groups of developing some distinct cultural identity is universal and an unchanging part of human nature. The academic tribes of the various disciplines may belong to the bigger tribe, which is academia, but they will always aim for cultural distinctness and autonomy.

At the same time, this natural academic tribalism does not make relationships and exchanges between different academic tribes impossible. Julie Thompson Klein speaks of 'trading zones' at the fringes of disciplines in which 'interlanguages' like 'pidgins' and 'creoles' can emerge.⁶⁶ Highly specialist disciplinary languages are thus simplified and partially integrated or mixed in the process of the trading and borrowing of ideas and concepts. New hybrid cultures and communities can form and exist at these fringe areas, culturally enriching their respective larger disciplinary communities. In particular the Internet offers great opportunities for virtual communities where specialists from various disciplinary backgrounds can establish new interdisciplinary communities and intellectual networks. For example, Dan Sperber argues that because of the Internet and IT 'it has become much easier for individual researchers to establish and maintain communication based on common intellectual interests rather than on institutional alliance'.⁶⁷ On the other hand, the interdisciplinarity or interdisciplinary discourses can become themselves a new academic territory or

⁶⁵ Marilyn Strathern (2005), 'Anthropology and Interdisciplinarity', *Arts and Humanities in Higher Education* 4:2, p. 130.

⁶⁶ Julie Thompson Klein (1996), *Crossing Boundaries/Knowledge, Disciplinarity, and Interdisciplinarity*, Charlottesville: University of Virginia Press, p. 51.

⁶⁷ Dan Sperber (2003), 'Why Rethink Interdisciplinarity?', *Interdisciplines.org* [website], <<http://www.interdisciplines.org/interdisciplinarity/papers/1>> (accessed 19 January 2009).

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a new discipline engaged in turf battles with competing and affected disciplines.⁶⁸ So it appears that by introducing interdisciplinary studies in North America and the UK 'disciplinary boundaries were re-drawn rather than demolished'.⁶⁹ Tribalism thus remains a very persistent feature of academic cultures.

How Relevant?

The anthropological view can analyse and explain academic cultures by looking at their cultural practices that reinforce group identity. There are some excellent studies of academic cultures available, most importantly Tony Becher's and Paul Trowler's book, which looks at academic culture of the 1980s and 1990s in the US and Britain.⁷⁰ The advantage of the anthropological view is that it is primarily descriptive and not normative. The anthropologist will always be very reluctant in making value judgements about different cultures and will aim at presenting them as neutrally as possible. What the anthropologist will not and cannot offer is any guidance about the future other than saying that some aspects of collective human behaviour are more or less a fixture. From this point of view we may never overcome (academic) tribalism though exchanges between cultures are certainly possible and can be quite beneficial for all sides concerned.

3. The Sociological Perspective: Professionalization and Division of Labour

General Outlook

Like in the case of anthropology it is also quite difficult to speak of any particular sociological perspective of academic disciplines, in particular as sociology is the broadest and most inclusive of all social sciences. It lacks a unifying paradigm or

⁶⁸ Vaughan Baker (1997), 'The Perils and Promises of Interdisciplinarity in the Humanities', in: Lewis Pyenson, *Disciplines and Interdisciplinarity*, p. 61.

⁶⁹ Elizabeth Bird (2001), 'Disciplining the Interdisciplinary: Radicalism and the Academic Curriculum', *British Journal of Sociology of Education* 22:4, p. 463.

⁷⁰ Tony Becher and Paul R. Trowler (2001), *Academic Tribes and Territories*, Buckingham: The Society for Research into Higher Education and Open University Press.

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even a unifying object of research⁷¹ and is fragmented into no fewer than 30 to 40 subdisciplines.⁷² Although it is possible to trace back the tradition of sociology to Auguste Comte and the early 19th century, the discipline as such did not exist before it became institutionalised in the form of academic journals and departments during the 1890s in the US and Europe. The discipline of sociology enjoyed great success during the 20th century, but serious worries about its crisis and uncertain future reappeared periodically in the 1960s, the 1980s and in recent years.

Though sociology is a discipline that is notoriously difficult to define, an early thinker of the discipline argued that ‘a sociologist is a man who is studying the facts of society *in a certain way*’.⁷³ Like philosophers, sociologists would be interested in the totality of human life, however with a focus on how it relates to society. A sociologist can be legitimately interested in any aspect of human life, but it is the sociological mindset that sets him or her apart from other (social) scientists. Furthermore, as will be seen below, being a sociologist also relates to the ‘facts of society’ as they concern employment. Being a sociologist depends to no small degree on being employed as such and on practising sociology *professionally*. Generally speaking, the outlook of sociology is that human behaviour is largely determined by societal practices and societal organisation. Any human behaviour or societal group can be analysed from this particular angle.

If one looks at the topics that have traditionally interested people, who call themselves ‘sociologists’ most, then one would probably look at academic disciplines in the categories of the sociology of work. This branch sociology deals with the phenomenon of professionalization and the societal division of labour. Professionalization is a social process through which an activity becomes a means for people to make a living. A professional is someone who can carry out

⁷¹ John Urry (1981), ‘Sociology as a Parasite: Some Vices and Virtues’, in: Philip Abrams, Rosemary Deem, Janet Finch and Paul Rock (eds), *Practice and Progress: British Sociology 1950-1980*, London: George Allen & Unwin, p. 32.

⁷² Mattei Dogan (1996), ‘The Hybridization of Social Science Knowledge – Navigating Among the Disciplines: The Library and Interdisciplinary Inquiry’, *Library Trends* (Fall).

⁷³ Albion Small (1903), ‘What Is a Sociologist?’, *American Journal of Sociology* 8, p. 468.

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a certain activity with a higher level of skill and knowledge than an amateur and someone who is paid for it sufficiently to base their own livelihood on that activity. Scientific activity or research were during most of the 19th century still not particularly professionalized, as permanent paid scientific positions were rare and scientists were unable to dominate work processes, material rewards or access to academic jobs.⁷⁴ This changed only in the late 19th century through the creation of academic professional associations, which evaluated and disseminated scientific work through discipline-specific academic journals and which thus created systems of reputation and reward.⁷⁵

Academic disciplines can then be treated as a particular form of the division of labour in science and as a crucial aspect of the overall professionalization of science. Academic professions can be quite influential as they control resources of academic departments, access to the profession by awarding degrees and through employment, and as they ultimately define what is good practice in the profession. In other words, the 'disciplines were both units of labour market definition and control, and of intellectual production and validation'.⁷⁶ As a result, by professionalizing academic disciplines it enables academics to gain the freedom of following their own pursuits and professional interests. At the same time, professionalization increases the competition amongst the disciplinary professional groups over limited resources. The disciplines are thus competing over money and influence within the universities and the overall scientific community.

Since the early 1980s sociologists have observed a tendency of deprofessionalization or a weakening of professional identities and attributes in modern society. It has been argued that the academic professions have generally lost some of their autonomy because of a weakening of academic knowledge claims and external pressures to make their work more relevant to the wider

⁷⁴ Richard Whitley (2000), *The Intellectual and Social Organization of the Sciences*, Oxford: Oxford University Press, p. 21.

⁷⁵ Joe Moran (2002), *Interdisciplinarity: The New Critical Idiom*, London: Routledge, p. 13.

⁷⁶ Richard Whitley (2000), *The Intellectual and Social Organization of the Sciences*, Oxford: Oxford University Press, p. 57.

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science community and society at large.⁷⁷ In particular the 'audit culture' or the tendency of imposing external quality standards on academic work has been singled out as a major factor in the overall process. So it is no surprise that academics feel alienated and see their professional identity in a crisis.⁷⁸

Special Insights

The division of labour is one of the defining characteristics of modernity and is an expression of the increasing rationality of societal organisation. Dividing the project of science into specialised disciplines, which work separately towards the overall production of knowledge would be seen as a rational and efficient arrangement, similar to the division of labour in society overall. This division of labour in science into disciplines was according to Immanuel Wallerstein a 'triumph of liberal ideology',⁷⁹ which has created specialists pursuing the aim of turning their specialisations into distinct professions.

Academic disciplines certainly have all the main characteristics of other professions: they have collegiate autonomy over professional training and the certification of professional competence, they have a distinct set of knowledge and skills that is institutionalised in a curriculum, they have distinct professional ethics and there is a community of professionals that cultivates a distinct professional habitus.⁸⁰ More established disciplines will come closest to being identified as distinct professions, while the members of newer and less established disciplines will probably see themselves as scientists in a more general way.

The more an academic discipline is linked to a career path or profession outside academia, the more successful these attempts of professionalization tend to be. The sociological perspective thus explains why academic disciplines enjoy

⁷⁷ Tony Becher and Paul R. Trowler (2001), *Academic Tribes and Territories*, Buckingham: The Society for Research into Higher Education and Open University Press, p. 13.

⁷⁸ John Beck and Michael F.D. Young (2005), 'The Assault on the Professions and the Restructuring of Academic and Professional Identities: a Bernsteinian Analysis', *British Journal of Sociology of Education* 26:2 (April), p. 184.

⁷⁹ Immanuel Wallerstein (1991), *Unthinking Social Sciences/The Limits of Nineteenth-Century Paradigms*, Cambridge: Polity Press, p. 19.

⁸⁰ John Beck and Michael F.D. Young (2005), 'The Assault on the Professions and the Restructuring of Academic and Professional Identities: a Bernsteinian Analysis', *British Journal of Sociology of Education* 26:2 (April), p. 188.

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a different reputation and in particular why there are such big differences between established and less established disciplines. Pierre Bourdieu has analysed these differences in terms of a 'clash of faculties' for the French university establishment of the early 1970s in his book *Homo Academicus*.⁸¹ Bourdieu's units of analysis are not individual disciplines but rather the four main faculties of French universities, which are medicine, law, science and arts. He shows that the more established faculties of medicine and law exhibit the greatest homogeneity in terms of their members and that they tend to have a far greater influence within universities and academia at large. They are the most scholarly faculties requiring their members to learn crucial aspects of knowledge by heart and they have clear links to professions outside the academy. In contrast, science and arts faculties are far more heterogeneous and less influential. Their members face a far more uncertain career, which means that they are older when they reach a senior position, that they are more likely to be unmarried or divorced, that they have fewer children and generally hold more left-wing political views.⁸²

The academic professions or disciplines are thus identified as the main power blocs in the academic environment with the most homogeneous and professionalised disciplines exerting most influence in universities and the scientific community. Similar to developments in other areas of society where the power of professions is diminishing, as they become more and more subjected to external forces and societal demands, there has been a considerable decline in the status and social esteem of professors, whose salaries and autonomy has been curtailed.⁸³ This trend is accompanied a growing academic proletariat with largely diminished career opportunities. Apparently, academics in some countries such as the US, UK, Japan and Sweden feel to a much greater extent that their

⁸¹ Pierre Bourdieu (1988), *Homo Academicus*, Cambridge: Polity Press.

⁸² *Ibid.*, pp. 43-47.

⁸³ Peter Scott (2007), "From Professor to 'Knowledge Worker': Profiles of the Academic Profession", *Minerva* 45:2, pp. 205-215.

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professions and status would be under attack, while in other countries they are more content.⁸⁴

Not all is bad and there are certainly some positive aspects to this trend of the decline of academic professions, as individuals are freed from sometimes repressive professional structures that did not encourage creativity or intellectual risk-taking. There also seems to be a return to the scientific generalist, who can be equipped with generic academic skills that can be applied to many contexts.⁸⁵ This 'new generalism' can be seen, for example, in the generic research training programmes that many universities nowadays offer to young academics.⁸⁶ As a result, academics will gain more freedom in choosing their own fields of research and their own methods. The downside might be that they will lose the protection (intellectual, but also legal protection) and the sense of belonging that the academic professions used to provide. Academics will be on their own and no longer be automatically part of a specific scientific community, but rather required to consciously choose their own community – maybe even many times during their career. In practice this might mean that many academics will have to try to make a living out of frequently moving from one short-term research or teaching assignment to another embracing a flexible 'can-do' attitude.

How Relevant?

The sociological perspective is important because it can make sense of what is happening in academic professions in the context of larger trends in the world of work, as disciplines are largely identified with a particular group of practitioners or professionals. The professions overall are weakened by accelerating social and technological change, which has led to the notion of 'life-long' learning. In academia this means that the familiar disciplinary structures are also at risk because of the larger trend of deprofessionalization. However, no discipline can survive without a community of practitioners or professionals. It is at least

⁸⁴ Jürgen Enders (1999), "Crisis? What Crisis? The Academic Professions in the 'Knowledge' Society", *Higher Education* 38:1, pp. 71-81.

⁸⁵ Julie Thompson Klein (2005), *Humanities, Culture and Interdisciplinarity/The Changing American Academy*, New York: State University of New York Press, pp. 37-39.

⁸⁶ John Beck and Michael F.D. Young (2005), 'The Assault on the Professions and the Restructuring of Academic and Professional Identities: a Bernsteinian Analysis', *British Journal of Sociology of Education* 26:2 (April), p. 190.

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questionable whether the aim of creating academic generalists can lead to the creation of professionals in their own right, who can develop universal professional practices and their own work ethos. As a result, disciplines and disciplinarity would be seen by sociologists to be endangered by wider societal trends. Interdisciplinarity, or rather postdisciplinarity, would appear to be a symptom and result of the overall crises of the academic professions and the disciplines that they represent.

4. The Historical Perspective: Evolution and Discontinuity

General Outlook

Like any other social phenomena academic disciplines do have a history. Every discipline can be analysed by looking at its historical development. Historians of science can look at the specific historical conditions that led to the foundation of an academic discipline and at how it changed over time, or in other words, its evolution. The historical perspective helps to understand the great continuity of disciplines, but also the points of discontinuity or departure from obsolete practices and ways of thinking (what Thomas Kuhn has famously termed 'paradigm change'). Sometimes this leads to the disappearance of an older discipline and the creation of a new one that can replace it. In other words, the historical perspective captures the great dynamics of the development of science and the academic disciplines.

Historians will generally look for the wider societal context and the overall conditions that influenced the development of a specific discipline, for example the political climate or any particular needs society had at a particular time, as well as internal factors that shaped its development. For example, Julie Thompson Klein has pointed out that the academic discipline was an invention of the late Middle Ages. The term was first applied to three academic areas for which universities had the responsibility of producing trained professionals:

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theology, law and medicine.⁸⁷ Klein argues that this early disciplining of knowledge was a response to external demands, while the specialization into disciplines that emerged in the 19th century was due to internal reasons. By that time science and the pursuit of scholarly and new knowledge had become an institutionalised and highly systematic endeavour. Disciplinarity helped recruiting and producing the specialists that were needed in the context of the industrialisation and the advance of technology.⁸⁸ As society grew in complexity, the social sciences, which tried to emulate the natural sciences, were invented. The consequence was that a whole range of new disciplines were institutionally established in the late 19th and early 20th century, including the main social sciences sociology, anthropology, psychology, political science and economics.⁸⁹

The rationale for the new disciplines was that they dealt exclusively with a particular object or topic that was not covered by any other discipline. 'The sociologist dealt with contemporary societal organization outside the political sphere, thus remaining sharply distinguished from the political scientist. An anthropologist was concerned with culture, by which he meant not literature or the fine arts but primarily group attitudes, frequently focusing upon pre-literate societies. The economist studied only the means of production.'⁹⁰ This topical division was primarily pragmatic, as it allowed the disciplines to develop a stable identity and an agenda for research and further development. Some disciplines enjoyed some lasting success, but others either quickly disappeared (e.g. phrenology, physiognomy, ethnogeny) or devolved from an established discipline to a field of study (e.g. theology to religious studies) because of a changing political and societal environment.

⁸⁷ Julie Thompson Klein (1990), *Interdisciplinarity/History, Theory, and Practice*, Detroit: Wayne State University Press, p. 20.

⁸⁸ Joe Moran (2002), *Interdisciplinarity: The New Critical Idiom*, London: Routledge, p. 13.

⁸⁹ The first chair in sociology in Britain was established in 1907; the Royal Anthropological Institute was founded in 1871; the British Psychological Society was founded in 1901; the first chair in international politics in Britain was established at the University of Wales in 1912; the first chair in Political Economy was established at the University College London in 1828 with the professionalization of the discipline occurring at the end of the 19th century.

⁹⁰ Kenneth T. Grieb (1974), 'Area Studies and the Traditional Disciplines', *The History Teacher* 7:2 (February), p. 230.

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Though the number of disciplines and associated departments is proliferating,⁹¹ many established disciplines, especially in the social sciences are afraid of failing as a discipline. Academic disciplines can get into trouble once the political and historical context changes and they no longer appear to be very useful. Disciplines like anthropology seemed quite useful in the time of colonialism where so-called civilised cultures were subjugating so-called primitive cultures and were later trying to reverse that situation through de-colonisation. W.S. Bainbridge has pointed out that '[s]ome would even say that cultural anthropology was an element of European colonialism, or a temporarily necessary corrective to its cultural hegemony, and with the demise of colonialism it has become superfluous.'⁹² Sometimes the difficulties a discipline faces are self-inflicted. In the special case of British Sociology it has been argued that it was mainly a lack of effective leadership that prevented the discipline from achieving the same status as in other countries and which was one of the causes for its decline in the 1980's following a period of rapid expansion.⁹³

Special Insights

The historical perspective shows that the development of academic disciplines cannot be understood without reference to historical context. It also helps understanding the evolutionary path taken by specific disciplines. Often new disciplines have been set up to meet particular political and societal needs. For example, Michel Foucault has shown that the social sciences were set up and prospered because of the political need of getting more information on the population, which could be used for more effective government and which helped to stabilise emerging political and societal structures.⁹⁴ The new discipline of area studies was set up in the US after the Second World War in order to train 'area specialists' who could assist in shaping the increasingly global US foreign policy

⁹¹ Hershey H. Friedman (2001), 'The Obsolescence of Academic Departments', *Radical Pedagogy* 3:2 (Fall).

⁹² W.S. Bainbridge, (2003), 'The Future in the Social Sciences', *Futures* 35, pp. 639.

⁹³ Reba N. Soffer (1982), 'Why Disciplines Fail? The Strange Case of British Sociology', *The English Historical Review* 97:385 (October), pp. 767-802.

⁹⁴ Roger Deacon (2002), 'Truth, Power, and Pedagogy: Michel Foucault on the Rise of the Disciplines', *Educational Philosophy and Theory* 34:4, p. 446.

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of the beginning Cold War era.⁹⁵ Similarly, new disciplines like computer science and artificial intelligence were closely linked to military applications and prospered because of military funding. Once these new disciplines had been set up they developed a life of their own, possibly freed from their original purpose if they managed to diversify their funding and main stakeholders.

The formation of a new discipline thus requires talented scientists who can take over the burden of intellectual leadership by defining what the new discipline is about and by giving it a clear agenda for research, which can inspire followers. In other words, founding a new discipline needs adventurous pioneers who are willing to leave their original discipline behind and to cover new ground, which always includes a certain risk that they and their new discipline will possibly fail. This means that practically every new discipline starts off necessarily as an interdisciplinary project that combines elements from some parent discipline(s) with original new elements and insights. Once the discipline is established a new type of researcher is needed. The new discipline needs people who can consolidate it by filling in the gaps left by the pioneers. Without these consolidators and synthesizers a discipline will never develop some stable identity and will eventually go nowhere. So in the consolidation phase disciplines will start restricting too original ideas and will become more and more focused on disciplinary coherence and orthodoxy.

Furthermore, disciplines seem to show typical development patterns from formation to eclipsing and later decline. In other words, there might be a typical life cycle for disciplines. Kenneth Grieb has pointed to a process of 'maturing' in which a discipline broadens its scope so much that it starts overlapping with other disciplines.⁹⁶ As all scientific activity is based on the idea of scientific progress in the form of a continuous expansion of knowledge, scholars need to innovate in order to earn their reputation from their colleagues. This means that new subject matters and methods are constantly integrated into a discipline, which means

⁹⁵ Julie Thompson Klein (1996), *Crossing Boundaries/Knowledge, Disciplinarity, and Interdisciplinarity*, Charlottesville: University of Virginia Press, p. 115.

⁹⁶ Kenneth T. Grieb (1974), 'Area Studies and the Traditional Disciplines', *The History Teacher* 7:2 (February), p. 232.

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that the discipline loses its coherence and disciplinary demarcations become less relevant. The very distinct identities and coherence that the disciplines once acquired is lost in this process of constant fragmentation, which means that political scientists, for example, can no longer say what political science as a *whole* is all about. At the same time, without that constant expansion disciplines will forego their dynamism and will yield increasingly diminishing returns until they disappear. According to Mattei Dogan and Robert Pahre, it would be the advance of knowledge that drives fragmentation with most innovation occurring at the margins of disciplines.⁹⁷ Without innovation disciplines will not be able to successfully reproduce themselves, as they will not attract talented researchers or convince a wider audience of the discipline's intrinsic value.

As a result of increasingly overlapping subject areas, disciplines are now identified more through the methodology they apply to certain topics or research fields, rather than through the topics or research fields themselves.⁹⁸ An anthropologist and a sociologist might be equally interested in a particular aspect of modern society – the difference might only be that the anthropologist might use ethnography as a method and the sociologist a survey. However, as sociologists have also become interested in the method of ethnography it may indicate that the distinction between sociology and anthropology is artificial and an accident of history rather than the result of any scientifically substantial difference between the disciplines. It sometimes happens that academics in overlapping fields split from their parent disciplines and form a new discipline. Anthropology, for example, split from its parent natural history and psychology split from philosophy and medicine. A new discipline will later also undergo the process of broadening and fragmentation, which produces more and more disciplines and subdisciplines. So if it is not just obsolescence that threatens the survival of a discipline, but also its own success by the way of expanding scholarship and maturing.

⁹⁷ Mattei Dogan and Robert Pahre (1990), *Creative Marginality/Innovation at the Intersections of Social Science*, Boulder, CO: Westview Press, p. 59.

⁹⁸ Kenneth T. Grieb (1974), 'Area Studies and the Traditional Disciplines', *The History Teacher* 7:2 (February), p. 232.

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How Relevant?

The historical view can help understanding why disciplines are created and why they sometimes fail or fundamentally change by adopting a new paradigm. Historians of science have uncovered the close or indirect connections between particular historical conditions and the development of disciplines and have shown the contingency and artificiality of current disciplines and disciplinary boundaries. There was no apparent scientific necessity for the way science is now divided in disciplines or even for the disciplines themselves.⁹⁹ Sometimes there are 'historical accidents' that can lead to the sudden creation of a new discipline. An obvious example is terrorism studies, which was hardly a discipline before the 9/11 terrorist attacks.¹⁰⁰ The discipline emerged because there was suddenly a political need for understanding the new threat environment after the Cold War. Terrorism studies has a growing number of scholars and the new discipline already challenges the survival of the older discipline of traditional security studies, which has now been renamed into 'strategic studies'. In other words, we should not be surprised by the change in the overall arrangement of disciplines. There are few fixtures and the only thing that seems certain that all disciplines can be expected to have a limited life span.

5. The Management Perspective: Market and Organisation

General Outlook

From a management perspective higher education and science is about making good use of limited resources for meeting the demands of society. The organisation of universities in departments divided along disciplinary lines is a means of shaping the supply (knowledge) according to market demands and

⁹⁹ Steve Fuller (2003), 'Interdisciplinarity: The Loss of Heroic Vision in the Marketplace of Ideas', *Interdisciplines.org* [website], <<http://www.interdisciplines.org/interdisciplinarity/papers/3>> (accessed 05 January 2009).

¹⁰⁰ Rebecca Attwood (2007), 'Terrorism Studies Surge', *Times Higher Education* (22 July), available at: <<http://www.timeshighereducation.co.uk/story.asp?storyCode=209404§ioncode=26>> (accessed 21 January 2009).

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according to internal organisational requirements and choices. “Faculty must be ‘placed,’ their salaries must be located in some departmental budget, teaching loads and student credit hours must be assigned and balanced, performances must be evaluated.”¹⁰¹ Disciplinary department structures are thus seen primarily as a management problem and a way of marketing knowledge. Because of significant shifts in terms of funding and rising costs of research over the last 20 years, universities have become increasingly subjected to market forces.¹⁰² This usually means that universities are increasingly encouraged to adopt better ‘business practices’ that can make them more competitive in the education and research market. As a result, universities have to question their current forms of management, organisation and practices.

A key term that has emerged in recent years, which aims at addressing this problem, is ‘knowledge management’: a discipline created for optimising (business) organisations. It effectively blends administration, human resources, information systems management and strategy and is based on the idea of a ‘learning organisation’, which makes best use of its resources by constantly adapting to a changing environment. Knowledge management is a primarily a business concept. However, in the process of the growing marketization and privatization of universities, it is being applied to higher education and academic research. Universities need to position themselves on the higher education and science market by recruiting and retaining suitable personnel that can acquire and promote marketable new knowledge in the form of attractive courses, technological or business application and policy development – all of which are important sources of income and reputation for universities.

As societal demands change, the supply side has to adjust to these changes as well. As a result, universities are under increasing pressure to respond to the changed market by creating new courses and research programmes that are more competitive. This also means to discontinue research

¹⁰¹ Vaughan Baker (1997), ‘The Perils and Promises of Interdisciplinarity in the Humanities’, in: Lewis Pyenson, *Disciplines and Interdisciplinarity*, p. 59.

¹⁰² Tony Becher and Paul R. Trowler (2001), *Academic Tribes and Territories*, Buckingham: The Society for Research into Higher Education and Open University Press, pp. 8-10.

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and study programmes that are no longer successful. But closing down unsuccessful departments has proven to be rather difficult because of the resistance that the professionalized disciplines and affected departments can mobilise.¹⁰³ However, universities responded by offering new interdisciplinary educational and research programmes. This can lead to the formation of new interdisciplinary departments and eventually new disciplines, or it might result in a completely different postdisciplinary organisation of universities. In fact, there has been undoubtedly a continuous and strong growth of interdisciplinary teaching and research programmes in the American academy. According to one count, there were already 410 interdisciplinary programmes in 280 different American universities in 1996, which represents a 75 percent growth from 1986.¹⁰⁴

This promotion of interdisciplinary organisational arrangements has often been perceived as a cost-cutting measure. Universities simply cannot afford to offer the full range of disciplines and to have the respective number of departments representing these disciplines. Lennard Davis has pointed out that “You could get rid of that spindly comparative-literature department by combining it cleverly and ‘interdisciplinarily’ with the heftier English department, and then you’d have to pay only one secretary instead of two.”¹⁰⁵ Not surprisingly, there is a clear tendency to combine departments into new interdisciplinary departments or research centres, which are more flexible structures. Their emphasis in research and teaching can more easily shift in relation to the specialists that are represented in them. A few sociologists within a cultural studies department have far less influence on curriculum and the management of the school or university than a full-blown sociology department would have. Because of fluctuation of personnel this means that the overall composition of interdisciplinary departments in terms of discipline representation can change easily with direct and quite immediate effects on curricula and research.

¹⁰³ Hershey H. Friedman (2001), ‘The Obsolescence of Academic Departments’, *Radical Pedagogy* 3:2 (Fall).

¹⁰⁴ Stephen L. Payne (1999), ‘Interdisciplinarity: Potentials and Challenges’, *Systemic Practice and Action Research* 12:2, p. 175.

¹⁰⁵ Lennard Davis (2007), ‘A Grand Unified Theory of Interdisciplinarity’, *The Chronicle Review* 53:40, p. b49.

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Special Insights

The organisation of universities into disciplines and departments is only one of many possibilities of organising people and knowledge. It can be argued that it might have been an effective organisation when it was originally created in the 19th century. Now this arrangement seems totally outdated and wasteful because of the considerable overstaffing and duplication of effort across departments and science at large. Even worse, current organisational structures of universities do not reflect intellectual realities and overall (societal) trends of knowledge production and management. According to Michael Gibbons' highly influential book on *The New Production of Knowledge*,¹⁰⁶ a new mode of knowledge production (termed Mode 2) has emerged, which happens outside disciplinary and academic contexts and which is focused on creating knowledge directly related to its application. Traditional discipline-specific knowledge production within academic departments (termed Mode 1) is becoming increasingly obsolete and less relevant for society. In other words, scholarly knowledge loses its market value, while knowledge creation through application yields the highest usefulness and profits, which is discussed in terms of accountability. Gibbons claims that Mode 2 knowledge would be inherently heterogeneous and transdisciplinary¹⁰⁷ and that it would be more accountable than Mode 1 knowledge production.¹⁰⁸

To some extent universities have already shifted to Mode 2, as they have become major players in intellectual property rights and consultancy. It is certainly foreseeable that alternative forms of university organisation, which are better adjusted to the market, become more and more pervasive. Instead of organisation into disciplinary departments universities might organise teaching and research around broader topics or 'studies' areas such as women's studies, environmental studies, security studies and so on, which generally lack strong disciplinary identities. Practically all of them incorporate aspects of a great range

¹⁰⁶ Michael Gibbons, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott and Martin Trow (1994), *The New Production of Knowledge/The Dynamics of Science and Research in Contemporary Societies*, London: SAGE.

¹⁰⁷ *Ibid.*, p. 3.

¹⁰⁸ *Ibid.*, pp. 78-80.

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of parent disciplines without acquiring all the hallmarks of a distinct discipline. It may be the case that research and teaching will be separated completely because of the increasing cost of research, which makes it financially unwise to combine research and teaching duties for researchers working on expensive projects. Furthermore there is an observable tendency that research output has become the major factor in terms of academic career advancement, which is particularly apparent in the UK because of its introduction of the Research Assessment Exercise.¹⁰⁹ The top researchers in universities often do very little, if any teaching. This general tendency of emphasizing research over teaching could 'encourage the emergence of mainly teaching organisations'¹¹⁰ where the work of lecturers would largely resemble the work of secondary school teachers.

As traditional disciplinary arrangements become increasingly less relevant, we might be moving more and more to a postdisciplinary world of shifting specialisations and special interest areas. In such a world universities would hire academics and other professionals because of their narrow specialisation and not because of their disciplinary affiliation or their discipline specific training. This will allow them to form 'clusters' of knowledge and research and will enable universities to remain competitive by focusing on expertise in niche fields, rather than by focusing on acquiring a broad competence in an increasing number of disciplines, which will in any case not be sustainable.

How Relevant?

In a world of limited resources and growing marketization of education and knowledge, the management perspective of disciplinarity is immensely important. Universities have been organised around disciplines in the past because it used to be a particularly effective organisation of teaching and research. The downside of this arrangement is clearly the lack of flexibility caused by too rigid organisational and intellectual structures. It also means that the number of departments has grown constantly and that the overall organisation and

¹⁰⁹ Tony Becher and Paul R. Trowler (2001), *Academic Tribes and Territories*, Buckingham: The Society for Research into Higher Education and Open University Press, p. 78.

¹¹⁰ Michael Gibbons, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott and Martin Trow (1994), *The New Production of Knowledge/The Dynamics of Science and Research in Contemporary Societies*, London: SAGE, p. 80.

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management of resources has become inefficient. More departments means more staff, also more staff in senior positions, and lots of duplication in terms of work and resource requirements. Newer forms of management emphasize lean management and flexible 'virtual' organisational arrangements that allow rapid and effective reorganisation in order to adjust faster to the changing market and knowledge environment. As a lot of research or knowledge production already occurs outside academia, especially in the private and government sectors, universities will try to emulate alternative and more efficient organisational arrangements of knowledge production and management. From a management perspective there is no necessity for science to be organised along disciplinary lines. The rapid proliferation of interdisciplinary centres, institutes, programmes and colleges might indicate that disciplinary departments could become in the future fairly small employers for academics.

6. The Educational Perspective: Teaching and Learning

General Outlook

It has been argued that the interdisciplinarity debate is too focused on research and that relatively little discussion occurs in the area of teaching.¹¹¹ The science of education offers a different perspective on disciplinarity and interdisciplinarity, which will be explored in this section. Education or pedagogics is a relatively new discipline that combines aspects of psychology, history, philosophy and some practical studies.¹¹² Its domain is the whole complex of teaching and learning. The discipline of education is nowadays a compulsory subject used for the training of teachers and university lecturers. Education is, of course, also a field of research that aims to understand the social reality of education.

The main problems and questions education deals with are: what content shall be taught to pupil and students (the question of curriculum)?; how should

¹¹¹ Lisa Lattuca (2001), *Creating Interdisciplinarity/Interdisciplinary Research and Teaching among College and University Faculty*, Nashville, TN: Vanderbilt University Press, pp. 19-20.

¹¹² Robert V. Bullough (2006), 'Developing Interdisciplinary Researchers: What Ever Happened to the Humanities Education?', *Educational Researcher* 35:8 (November), p. 5.

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the content be taught (the question of teaching method)?; what other educational goals shall be pursued in addition to teaching knowledge and skills (the question of values)? In other words, education has to answer to questions of truth, learning and morals. It has to reflect on the higher goals of education beyond passing on random knowledge and skills. The 'science of education' would be the reflexive effort of looking at the reality of education and trying to understand how it is practised. Education researchers are thus different from educators and they also aim at avoiding value judgements that are inevitable in the field of pedagogics, as pedagogics wants to determine good practice in teaching. The following section is more concerned with the perspective of educators and pedagogics, but also draws on some findings of education researchers.

The educational perspective on disciplinarity and interdisciplinarity is focused on the problem of curriculum or the question of what would be worthwhile to be taught to pupils and students. The content should be in some meaningful way relevant to students in terms of shaping their personalities and in terms of improving their chances of being successful in life, for example by finding suitable employment and pursuing a career afterward. Academic disciplines are thus mainly identified with subjects that provide content and structure to school and university curricula. School education and many higher education courses tend to be *multidisciplinary* in the sense that they require pupils and students to study more than one subject area. This is a very common practice that ensures that education does not become overly specialized, one-sided or ideological, turning out graduates who lack a more balanced understanding of the world.

Educators (teachers and lecturers) tend to be very much in favour of multidisciplinary in the sense of providing pupils and students with a greater range of possibilities for developing own interests and strengths. At the same time, educators seem to be most concerned about the tendency of mixing subjects in the form of interdisciplinary subjects and courses, as it simply might

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demand too much from students and teachers.¹¹³ The credibility of teachers depends on them being an authority in the subject(s) they teach. With the growth of knowledge it has become so difficult to be an authority in one discipline that claiming authoritative knowledge in more than one discipline looks like dilettantism.¹¹⁴ Similarly, it might be expecting far too much of students to require them to master many different types of knowledge in the context of relatively short academic courses that usually take just one to three years. Thus amongst many teachers and lecturers scepticism towards the interdisciplinary agenda seems to prevail.

Special Insights

The educational perspective offers a very complex picture. Disciplinary instruction has been the most traditional and common way of organising school education and courses of study. Disciplines provide the comfort of some stability in curricula and provide some general structure for the organisation of teaching, especially at an undergraduate level. For example, an aspiring political science graduate will have to take some modules in the main political science subdisciplines, which are political theory, political systems and international relations, before specialising in any particular field. The contact of political science students with 'sister' disciplines like history, sociology or law is seen as welcome, provided that they are experienced as complementary rather than competing subjects. The reason is that the discipline should be taught in a manner that it is a coherent body of knowledge. Coherence makes it easier for students to learn and understand a discipline. Contradictory knowledge claims or fragmented knowledge is simply far more difficult to digest and far less compelling. Coherence has therefore a major effect on the attitudes of students towards learning and their educational success.

¹¹³ Howard Gardner (1999), *The Disciplined Mind: What Students Should Understand*, New York: Simon & Schuster, p. 219.

¹¹⁴ Mattei Dogan (1996), 'The Hybridization of Social Science Knowledge – Navigating Among the Disciplines: The Library and Interdisciplinary Inquiry', *Library Trends* (Fall).

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Educational research indicates that there is overall a strong tendency towards more interdisciplinary subjects and courses.¹¹⁵ All disciplines are troubled by the explosion and increasing fragmentation of knowledge, making it more and more difficult for teachers to select what is really relevant to their students. It has been argued that this growing complexity would make interdisciplinary approaches to teaching and research necessary. Disciplinary boundary lines would be nowadays much harder to draw and this has already led to the creation of genuinely interdisciplinary courses like environmental studies, which combine a larger number of subjects.¹¹⁶ Educators have some mixed feelings about the new trend towards interdisciplinary courses. On the one hand, it is seen as an opportunity of liberating students from disciplinary parochialisms and narrow-mindedness. The student or disciplined researcher and scholar would no longer be, in Paul Feyerabend's words, a 'trained pet' stuck within a familiar paradigm that he or she would be too anxious to question,¹¹⁷ but would instead be free to see the many connections between numerous bodies of knowledge.

On the other hand, educators fear that students would just get confused forcing on them a variety of incompatible disciplinary perspectives and altogether contradictory fragments of knowledge. Students might come to the conclusion that any position or viewpoint is equally valid and that it would be unnecessary to make a substantial effort understanding that position. So instead of making students more critical thinkers the exact opposite could happen: students might just embrace a convenient position of uncritical relativism. More conscientious students and young researchers might also struggle in finding any intellectual base to start with. The education researcher Robert Bullough asks: 'Where, one wonders, will these young aspiring experts learn what makes a question worthy of enquiry and educationally important, and where will they gain the courage to

¹¹⁵ Julie Thompson Klein (1999), *Mapping Interdisciplinary Studies/The Academy in Transition*, Washington, DC: The Association of American Colleges & Universities, p. 2.

¹¹⁶ *Ibid.*, pp. 4-5.

¹¹⁷ Paul Feyerabend (1984), *Against Method/Outline of an Anarchistic Theory of Knowledge*, London: Verso, p. 25.

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go outside established bounds when dissent is needed and necessary?’¹¹⁸ Furthermore, being ‘interdisciplinary’ carries a terrifying intellectual risk, as one researcher describes: ‘The angel I hear – who sounds more like the bank robot reciting my inadequate balance than any imaginable angel – scornfully inflates my attempts to use the insights of other disciplines as polymath grandeur...the fear that I can’t possibly know anything about economics or government because a whole department in the next building really knows the subject is paralyzing and unproductive’.¹¹⁹

It appears that students would need some rigorous disciplinary training first before they go off and develop their own interdisciplinary research interests as one interdisciplinary researcher argued.¹²⁰ Disciplinary instruction does make a lot of sense at an undergraduate level. If interdisciplinary research is pursued at the postgraduate (doctoral) level aspiring interdisciplinary researchers would need some support infrastructure in the form of training, multiple supervisors and community that can compensate for the problem that the research does not occur within one disciplinary department.

One purpose of education is to prepare pupils and students for economic participation or for the job market.¹²¹ An academic degree used to be a ‘corporate certification of accomplishment in a field of knowledge’.¹²² This means that curricula should convey knowledge and skills that are considered relevant to employers. Disciplinary instruction allows potential employers to have some idea of the particular training a graduate has undergone and the particular skills and knowledge the graduate may have. For example, companies and banks like to employ economists because they tend to have mathematical skills and knowledge of economic processes and behaviour. This is what an economics

¹¹⁸ Robert V. Bullough (2006), ‘Developing Interdisciplinary Researchers: What Ever Happened to the Humanities Education?’, *Educational Researcher* 35:8 (November), p. 3.

¹¹⁹ Quoted in Vaughan Baker (1997), ‘The Perils and Promises of Interdisciplinarity in the Humanities’, in: Lewis Pyenson, *Disciplines and Interdisciplinarity*, p. 59.

¹²⁰ Lisa Lattuca (2001), *Creating Interdisciplinarity/Interdisciplinary Research and Teaching among College and University Faculty*, Nashville, TN: Vanderbilt University Press, p. 70.

¹²¹ Harry Brighouse (2006), *On Education*, London: Routledge, pp. 27-28.

¹²² Lewis Pyenson (1997), *Disciplines and Interdisciplinarity in the New Century*, Lafayette, LA: The University of Southwestern Louisiana Press, p. 28.

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degree certifies and what makes it valuable. Similarly, psychologists are valued on the job market for their empirical research and statistical skills and their understanding of human motivation. The problem with new and interdisciplinary degrees is that employers simply do not know what kind of employee they would get and what kind of skills and knowledge the employee could contribute to the organisation. As a result, the job prospects and career opportunities for graduates in interdisciplinary fields may be diminished.

In higher education this means that curricula should also enable students to join the academic profession and to become scholars who can advance science and knowledge. The problem with switching to interdisciplinary curricula and the interdisciplinary training of researchers is that the next generation of researchers will be less thoroughly trained in the disciplines. The true dilemma of education is therefore the growing divide between teaching, which still happens in the context of traditional disciplines, and the increasing importance of interdisciplinary research for which university education should prepare young researchers.

Relevance

Universities still proclaim themselves to be institutions of higher education, which means that education is their main business and should be their main concern. It is quite impossible to run an educational institution without curricula made up by subjects, or more abstractly, some thematically coherent teaching units. Effective teaching just needs authority, context and structure and cannot be carried out from some idealised postdisciplinary position of everything is possible or permissible. The academic disciplines of the modern university have shaped higher education by creating disciplinary subjects and by providing the suitably trained teaching personnel. There are ways of making courses and subjects more interdisciplinary, for example by requiring students to attend seminars in different departments or by team teaching classes. However, there are also time constraints and cognitive limitations on part of teachers and students that will make it necessary to discipline the interdisciplines, thus creating some stable and coherent body of knowledge and methods for assessing the quality of student work. (University) education without discipline(s) seems hardly a viable possibility.

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Disciplinary Perspectives on Disciplines Matrix

	Philosophy	Anthropology	Sociology	History	Management	Education
Paradigm	Knowledge	Culture	Social Organisation	Time	Market	Personality Development
What Factors Encourage Disciplinarity?	Language games/discourses	Cultural identity and segmentation	Professionalization/ Power Structures	Leadership of talented founders of a discipline	Past success of disciplinary organisation	Curriculum and the need for structured or 'disciplined' learning
What Factors Encourage Inter-/Transdisciplinarity?	Universalisation of knowledge	New forms of community and identity	Social Change/Decline of Professions	Maturation of a discipline/ lack of leadership	Better adaptation to the market	Changes of knowledge structures/new approaches to teaching
On Balance	Disciplines are needed for validating claims to truth	Disciplines offer a stable identity and are similar to tribal structures	Disciplinary structures are difficult to overcome because of the self-interest of power groups	Historically the number of disciplines has constantly expanded rather than declined	Disciplines are an obsolete form of the organisation of science and universities	Educators are more in favour of disciplinary education because of a concern that students may only be confused by competing claims to truth and world views

7. Survival Strategies for Disciplines

This paper has shown that academic disciplines are under attack from many sides. Most importantly there are budgetary pressures connected to rising costs of research and diminishing returns in some areas, which mean that a great many disciplines have to fear for their long-term survival. This final section will discuss possible survival strategies for academic disciplines with respect to their chances and perils. Most basically a threatened discipline has three options for responding to the threat to its existence: it can try to withdraw to its core areas and this way strengthen its identity and boundaries; it can move closer to a stronger discipline and form a strategic alliance; or finally, it can reconstitute itself within a newer and larger field of study aiming at dominating the new discourse. All of these strategies have their own dangers and there is no general recipe for success. It will depend on each specific discipline which strategy might work best. As disciplines are not monolithic entities it will be often the case that disciplines

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will turn to two or all three of these strategies. It therefore depends on good and strong leadership by the most talented scholars to give a troubled discipline a new direction and a new lease of life.

1. *Turning inward and strengthening boundaries*

The intuitive and spontaneous reaction of a community to a perceived outside threat is to turn inward and to attempt to improve the cohesion of its members. *United we stand, divided we fall* – so the slogan goes. The discipline will withdraw from knowledge territories that it can no longer claim to control and it will focus on its core areas and original virtues or strengths. This will increase the sense of identity and belonging of its members and allow it to concentrate its efforts on areas that are most promising and areas that are least challenged by others. This is the strategy that philosophy has chosen when it reconstituted itself as an academic discipline at the end of the 19th century. It withdrew to its core areas like logic, epistemology and ethics, where it could claim unique knowledge and expertise. In the United States academic philosophy became after the Second World War very focused on analytical philosophy along the lines of Wittgenstein. The result was that American philosophers became hostile to so-called ‘continental philosophy’, which they felt was not intellectually rigorous enough. They have largely succeeded in driving out competing traditions of philosophy out of American philosophy departments.¹²³ In effect, the analytic philosophy tradition turned inward and worked largely on refining their own analytical instruments. Indeed philosophy survived as an academic discipline in the modern research university, despite various attempts of moving it out of the academy completely. The great danger of this strategy is that the discipline loses touch with its societal and science environment and thus just speeds up its own obsolescence and irrelevance, if its basic assumptions on which it rests turn out to have been fundamentally flawed, or if it can no longer relate to a larger context anymore that can make it interesting to outsiders. In the history of the academic discipline of philosophy there has been a strong tendency towards

¹²³ J.M. Balkin (1996), ‘Interdisciplinarity as Colonization’, *Washington and Lee Law Review* 949.

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hyperspecialization and insularity.¹²⁴ An academic career in philosophy still requires strong focus on a particular philosophical tradition and particular philosophical debates, which are mainly characterised by their arcane and esoteric style. Academic philosophers have recently become worried about the possibility of an ultimate failure of their discipline and try to become more interdisciplinary by engaging more in public debates through ‘applied philosophy’ or ethics. An important example is bioethics, which might become a worthy successor to the current discipline of philosophy.¹²⁵ The bottom line is that without some real virtues and a real contribution to science and society not even the most tightly-knit and methodically rigorous discipline can pass the test of time.

2. *Forming strategic alliances with stronger disciplines*

The alternative to turning inward is to join forces with a strong ally who can protect the discipline from ultimate failure. A threatened discipline might collaborate with a strong discipline, which can make it more respected according to the motto: *If you can't beat them, join them*. So instead of strengthening boundaries, it will attempt to tear down or soften the clear border to a strong discipline by incorporating some of its methods and knowledge. A ‘soft’ discipline like sociology might turn to a ‘hard’ discipline like biology to form the new interdisciplinary amalgam of ‘sociobiology’, which combines the natural and social sciences.¹²⁶ Similarly, a province of philosophy, the philosophy of mind, has moved strongly into the direction of neuroscience and computer science,¹²⁷ which makes it much more respectable compared to its previous grounding in metaphysical theories that are now considered to be scientifically unsound. The advantage of this strategy is that it can lead to a new influx of ideas, which can rejuvenate the discipline. The obvious danger is that the stronger discipline might just appropriate or swallow this new interdisciplinary formation by having or attracting the more talented researchers who can take the new discourse further.

¹²⁴ Christina Bicchieri (2006), ‘Philosophy: What Is to Be Done?’, *Topoi* 25, pp. 21-23.

¹²⁵ Glenn McGee (2006), ‘Will Bioethics Take the Life of Philosophy?’, *The American Journal of Bioethics* 6:5 (September/October), pp. 1-2.

¹²⁶ Mattei Dogan (1996), ‘The Hybridization of Social Science Knowledge – Navigating Among the Disciplines: The Library and Interdisciplinary Inquiry’, *Library Trends* (Fall).

¹²⁷ Julie Thompson Klein (1996), *Crossing Boundaries/Knowledge, Disciplinarity, and Interdisciplinarity*, Charlottesville: University of Virginia Press, p. 47.

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If a social science discipline too keenly embraces 'foreign' methods, then it will tempt the experts who originally developed these methods to simply move into the new turf because they are better able to use and refine the methods than anybody else. For example, a social science discipline that becomes too focused on using computer modelling and simulation could become at some point just an adjunct or application of computing rather than remaining an autonomous discipline.¹²⁸ The reason is that learning a new method like computer modelling requires many years of specialised training in computer science, while the background knowledge for applying the method could be probably acquired a lot faster and more easily. So it is quite dangerous to adopt apparently more powerful methods from other disciplines just for the sake of it. In some cases it only results in rather unimaginative or inappropriate use of these methods in which much effort and talent is wasted on 'split[ing] a hair into four by factor analysis'.¹²⁹

3. *Reconstituting the discipline in a newer and larger field of study*

The final strategy is based on the idea that a discipline might reconstitute itself within a newer and more fashionable field of study with the aim of eventually dominating it, according to the motto: *better be a trendsetter than a follower*. Thus the threatened discipline could put itself in a much bigger context spanning a much wider area of knowledge that used to belong to a great variety of disciplines and attach to it a more attractive label. For example, anthropology can rebrand itself as cultural studies, which provides a much larger context through joining a great number of disciplines including anthropology, sociology, media and communication studies, film studies and literature. If a discipline cannot survive as an autonomous department in a university, then such a rebranding and uniting with other endangered disciplines is an obvious thing to do. A cultural studies department combining various social sciences might have a much stronger position and a much more certain future than the much smaller disciplinary departments. In any case, a big department is much more difficult to

¹²⁸ W.S. Bainbridge (2003), 'The Future in the Social Sciences', *Futures* 35, p. 645.

¹²⁹ Mattei Dogan (1996), 'The Hybridization of Social Science Knowledge – Navigating Among the Disciplines: The Library and Interdisciplinary Inquiry', *Library Trends* (Fall).

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eliminate than a small one and a broader scope offers greater opportunities for the development of teaching and research than a narrow scope. The downside is that the joined disciplines are unlikely to keep their own distinct identities, or at least they have their identities challenged by the creation of this seemingly new discursive formation. Will anthropology still be anthropology if the next generation of researchers are trained and understand themselves to be cultural studies scholars rather than anthropologists? Will anthropology not be eroded through its replacement by a succession of fashionable 'studies' areas such as 'cultural studies', 'development studies', 'postcolonial studies' and so on, one anthropologist wonders.¹³⁰ Some of the anthropology tradition and scholarship might survive, but it will also be in direct competition with the traditions of other disciplines joined in the cultural studies (or similar) fields. As a result, this strategy of fashionably reconfiguring disciplines could turn out to be just another path to extinction.

It is certainly too soon to declare the end of disciplines and there is the strong likelihood that disciplines and disciplinarity can survive in the long-term. Some disciplines will undoubtedly disappear, but it is unlikely that a single postdisciplinary science could be possible or successful or even desirable. An anarchical and completely pragmatic science based on constantly shifting interests and applications without some sustained and systematic effort will simply not work. Luckily, the natural tendency in society is towards order and not anarchy. At the same time, the old practice in the social sciences of mutual disregard has no future as well. The disciplines have to make a greater effort of understanding and appreciating each other's work without abandoning their own distinct identities, however arbitrary their boundaries are. This means embracing interdisciplinarity while keeping and nurturing disciplines as the ultimate reference points. Only such a mature and self-conscious science will be worthwhile pursuing and deserves a future.

¹³⁰ João Pina-Cabral (2004), 'The Future of Social Anthropology', *Social Anthropology* 13:2 (June), p. 127.

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