# From structure to rhizome: transdisciplinarity in French thought (1)

The concept of transdisciplinarity is not part of the explicit discourse or self-consciousness of 'French thought'. Rather, it is used here, imported from the outside as a kind of operator or problematizing device, to begin a process of rethinking one of that body of thought's most distinctive but infrequently remarked-upon characteristics – its tendency to move fluidly across disciplinary fields and modes of knowledge – and thereby also to rethink some of its main ideas.

Unexamined transdisciplinary dynamics motivate and energize many of the 'great books' of postwar European theory. In France one can point emblematically to Beauvoir's *The Second Sex* (1949), the first volume of Sartre's *Critique of Dialectical Reason*: *Practical Ensembles* (1960), Lévi-Strauss's *The Savage Mind* (1962), Foucault's *Words and Things*, Derrida's *Writing and Difference* and Lacan's *Écrits* (each 1966) and Deleuze and Guattari's two-volume *Capitalism and Schizophrenia* (1972, 1980). All are books that cross disciplines with a confidence and facility that belie the complexity of the exchanges between the disciplinary knowledges upon which they are built – in often widely differing and unstated ways. And all have productive but problematic relationships to the varieties of systematic orientation (including anti-systems) that characterize the post-Kantian European philosophical tradition, raising the question of the proto-philosophical character of transdisciplinarity itself.

One way to approach this situation would be to focus on the singularities of such canonical texts as literary works. Another, adopted here, is to approach them via the most general concepts that they construct, and to inquire into the genealogy and transdisciplinary functioning of these concepts: 'structure', of course, and its place within work that was later called 'post-structuralist'; but also existentialism (whose death was prematurely announced), within which the rethinking of the concept 'sex' associated with Western feminism has its philosophical beginnings; along with ideas associated with tendencies that do not fit so neatly into such boxes – like 'network'; and those that are simply too general to be usefully pegged to particular texts or even bodies of theoretical writing, such as 'science'.

The 'entries' presented below stake out some ground for rethinking these concepts from a transdisciplinary standpoint. By way of introduction to such a project (of which this is just one part of a small national sample – a second part of the sample will follow later in 2011), it may be useful to set out something of the thinking about transdisciplinarity that stands behind it. In particular, it is necessary to make clear what is *not* intended by the term 'transdisciplinarity' in this context, although the unintended usage must nonetheless be engaged if the current institutional conditions of knowledge-production are to be acknowledged.

## Trans-, inter-, multi-, hegemonic and anti-

In the context of the 'post-philosophical' theoretical heritage of twentieth-century European philosophy, the concept of transdisciplinarity has two main points of reference. The first is the German critical tradition (post-Hegelian and materialist in inspiration), within which it appears as one way of thinking the conceptual space opened up by the critique of the self-sufficiency of a disciplinary concept of philosophy: a universalizing conceptual movement that recognizes (following Marx) that the idea of philosophy can only be realized outside of philosophy itself. Transdisciplinarity is thus, here, the product of a certain philosophical reflection on the limits of philosophy; a result of the self-criticism of philosophy, in a manner that opens philosophical discourse up to the claims of other discourses – a 'philosophizing beyond philosophy' as Adorno described it, with reference to Walter Benjamin's writings. Here, among the disciplines that are crossed, transdisciplinarity thus appears to have a privileged relationship to the philosophical tradition, even if it is primarily one of negation (determinate in each instance, but not necessarily generalizably so).

Something similar may be discerned in the generalizing and often transcendental dynamics of a certain 'French thought' from 1945 through to the 1980s. This thought inhabits something of the same transdisciplinary conceptual space as the German critical tradition, but in a variety of radically anti-Hegelian modes. It too exhibits a complicated set of constitutive relations to philosophy – sometimes by its denial (which is not necessarily the same as its negation), but more often through philosophy's transformation: 'regenerating itself out of its other', as Balibar puts it, below, in relation to structuralism. Different ways of being anti-Hegelian in France, one might say, tend to articulate alternative modes of transdisciplinarity.

Currently, however, the term 'transdisciplinarity' is most frequently to be found as part of anglophone methodological debates in the physical and social sciences, and in Science and Technology Studies and Education Studies, in particular. It is there, quite reasonably I think, opposed to established concepts of *inter*disciplinarity and *multi*disciplinarity – those two multiple-choice boxes familiar to anyone who has filled in an AHRC grant application in the UK. ('Interdisciplinarity' is understood to refer to a multiplicity of disciplinary methods employed by a researcher; multidisciplinarity to a multiplicity of researchers with different disciplinary affiliations.) These are now bureaucratic categories. The notion of transdisciplinarity is certainly, in various ways, an advance it relation to these two established ways of thinking disciplinary relationships. However, it has been subjected to a bureaucratic straitjacket of its own.

The notion of transdisciplinarity is an advance, formally, in denoting a movement across existing fields (as opposed to simply a thinking *between* them or a *multiplication of* them); and it is an advance in terms of theoretical content, in so far as it locates the source of transdisciplinary dynamics pragmatically in a process of *problem-solving* related, ultimately, to problems of experience in everyday life. It has been placed in a straitjacket, however, to the extent to which this process of problem-solving is generally reduced to a relationship between a *policy-based* reformulation of the problems at issue, which are construed in such a way as to be amenable to *technological* or other instrumental solutions. (Think of the way, in the case of Education Studies, for example, that the concept of 'lifelong' learning rapidly morphed into 'work-based' learning.) This conception has been summed up by Helga Nowotny and others as 'Mode-2 knowledge production'. The social organization of knowledges appears here in large part as an administrative issue – as, indeed, does the current reorganization of academic knowledges in British universities along corporate–managerial lines. In this context, 'transdisciplinarity' can become one of the things that is 'happening to us' in the universities, and not in a nice way.

In the context of the German and French critical traditions, and their anglophone reception, on the other hand, it is not inter- and multi-disciplinarity to which transdisciplinarity is most fruitfully opposed, or the bureaucratic reorganization of knowledges which drives it, so much as the conceptual pair of *hegemonic* disciplinarity (think of 'English') and a resistant *anti*-disciplinarity (think of 'text'), which is motivated by a certain politicization of knowledges. In this context, transdisciplinarity is not the conceptual product of addressing problems defined as policy challenges, which are amenable to technological solutions, but rather of addressing problems that are *culturally and politically defined* in such a way as to be amenable to theoretical reformulation, as a condition of more radical forms of political address. The axes policy/technology are replaced by the axes theory/politics.

The emergent sociological discourse of transdisciplinarity is *positive* and *organizational*; the one gestured towards here is, though not wholly negative, at least *problematizing* and political.

The organizational conceit of the conference from which the 'entries' that follow derived is that we might obtain some insight into the relationship between problematization and transdisciplinarity through reflection upon the generalizing dynamics of particular concepts in French thought since 1945: from 'structure' to 'rhizome'…* This narrative is not intended teleologically but rather, like the notion of transdisciplinarity itself, as a critical device: a positing of oppositional points, conceptually and historically defined, the relationship between which – and hence the meaning of each – is still very much disputed. Politically, these poles represent two very different decades: those of the late 1950s and early 1960s ('structure'), and the late 1970s and early 1980s ('rhizome'), respectively: the beginning and the end, one might say, of a certain period of intellectual and political radicalism, which was definitively closed by the apparent opening of '1989'. Today, new openings present themselves.

**Peter Osborne**

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* The conference, 'From Structure to Rhizome: Transdisciplinarity in French Thought, 1945 to the Present – Histories, Concepts, Constructions', was held at the French Institute in London, 16–17 April 2010. It was organized by the Centre for Research in Modern European Philosophy (CRMEP) – in what were to become its final months at Middlesex University, before its move to Kingston – in collaboration with the Cultural Services of the French Embassy.

# Science

## The invisible transdisciplinarity of French culture

**Jean-Marc Lévy-Leblond**

Let me start with an apology: this conference obviously is concerned mainly with philosophy, literature, the social and human sciences, much more than with those sciences that are known as exact, natural or whatever – but which could probably, more to the point, be called 'inhuman' and 'asocial'. It is thus for me, as a physicist, a somewhat intimidating honour to speak in this setting. I will try to face the challenge seriously, and not just as a way of letting this assembly pay lip service to the importance of these other sciences in the social world, if not always in the intellectual one.

### What about transdisciplinarity?

Still, my task is not easy, for at least two reasons. First, there is nothing special about French sciences in this era of wide internationalization – although a case could be made for some specificities at the beginning of the period addressed to by this conference, namely, the immediate post-war years, when French science had accumulated a real lagging behind. However, this would be caught up in the 1950s.

Second, despite much talk about and enthusiastic perspectives on an alleged new kind of science, transdisciplinarity in the natural sciences has never been much of a real endeavour and, when practised, cannot be said to have met with overwhelming successes. Let me be content to discuss two opposite cases (not specifically French ones), both borrowed from the field of physics, which I hope to be representative of the problem. If only because, as is well-known, practitioners in the domain rather preposterously tend to think of their discipline as a universal and canonical one that, eventually, should encompass every other field of knowledge, or at least inspire it.

In the late 1940s, a few physicists, out of dissatisfaction with the theoretical difficulties of their science and/or ethical disillusion with its military applications (the nuclear weapons used over Japan), turned to biology. Thus was born molecular biology. But the point is that, considered at face value, this did not at all turn to be a transdisciplinary field. It has become an entrenched discipline of its own. As a consequence, the old frontier between chemistry and biology has been, for all practical and theoretical purposes, replaced by two frontiers, respectively, between chemistry and molecular biology on the one hand, and between molecular biology and conventional biology on the other hand. Even though this description is admittedly somewhat excessive, the whole development can hardly be considered as a triumph of transdisciplinarity.

More recently, there has been a strong renewal of interest in the use of sophisticated physical models and mathematical methods in the field of economy, applying tools such as fractal notions, chaos theory and so on. Is it necessary, in view of the recent economic crisis, to stress that this alleged transdisciplinarity, which was supposed to bring about the 'rigorization' of economic theory, has not been an obvious success?

Having explained how little I can tell you, now, let me come to that little I may tell you.

### The science wars

Let me first recall the main events and controversies that developed in the 1990s and became known as the 'Science Wars'. It all started with the publication of a book by the US scientists Paul R. Gross, a biologist, and Norman Levitt, a mathematician, *Higher Superstition: The Academic Left and Its Quarrel with Science*,[1] which consisted in a very strong attack against 'postmodernism' on the grounds of what they considered to be its anti-rationalist stance. They accused mainstream social scientists and philosophers of showing very little understanding of the (hard) sciences they were dealing with, and of advocating extreme forms of relativism, dismissing the specific character of scientific knowledge as such. The book was followed by a no less polemical conference organized in 1995 at the

New York Academy of Sciences by Gross, Levitt and the well-known historian of science Gerald Holton, under the strong title 'The Flight from Science and Reason'.

The counterattack came in early 1996 as a special issue of an academic journal of postmodern critical theory, *Social Text*. The authors were sociologists, anthropologists, political scientists and so on, but it also featured the historian of science Dorothy Nelkin, the researcher in biotechnology Les Levidow, the biologists Ruth Hubbard and Sarah Franklin, and the mathematician Richard Levins – quite a number of 'real' scientists. They argued that Gross and Levitt's attacks expressed the loss of self-confidence of scientists and their fear of the future, due to the deep changes in the social organization of research, the merchandizing of knowledge and the decline of state support for fundamental research. Viewed in this perspective, the social scientists, non-analytical philosophers and literary critics were but convenient scapegoats. Unfortunately, *le ver était dans le fruit* (the rot had already set in), since this most interesting and articulated issue of *Social Text* concluded with the now famous article by the physicist Alan Sokal, 'Transgressing the Boundaries: Towards a Transformative Hermeneutics of Quantum Gravity', which was but a nonsensical parody of postmodern jargon, deprived of any scientific contents; its publication was considered by Sokal to offer proof of the intellectual vacuum of the rest of the issue. Sokal exposed his successful hoax in May 1996, in the journal *Lingua Franca* (now extinct). There then followed in the Anglo-Saxon world a flurry of articles, books, conferences, which slowly subsided. I will not dwell on these exchanges since I am concerned here with the French situation. Let me only mention the important contribution by Steven Weinberg, a well-known theoretical physicist and Nobel prizewinner, who in the *New York Review of Books* of August 1996 fully endorsed Sokal's position, which was no doubt supported tacitly by the majority of natural scientists; although, to be fair, another well-known physicist, David Mermin, offered a much more balanced but much less publicized view.

## Whose 'impostures'?

In France, the debate was sparked by the publication of a book, co-authored by Alan Sokal with the Belgian physicist Jean Bricmont, with the telling title *Impostures intellectuelles*.[2] Now, the target was not so much science studies or postmodernism in general, or under its mainly American guises, but rather the French intelligentsia, which was indicted as the source of all the evil. Rather than an argued essay, the book offered a *bêtisier*, a collection of allegedly foolish quotations taken from works by Lacan, Derrida, Kristeva, Irigaray, Debray and the likes, where these authors referred or alluded to various bits of scientific knowledge, either mathematical, such as the Gödel theorem, or physical, such a relativity theory. Sokal and Bricmont indulged in pointing out the careless use of scientific terms as poor metaphors, going so far as to deny the validity of employing these terms in any discourse foreign to purely technical and specialized endeavours. True, it must be acknowledged that some of the quotations pointed out by Sokal and Bricmont were rather preposterous. But many of them were short sentences taken out of context, or badly transcribed oral remarks.

Of course, the authors thus accused of intellectual impostures reacted more or less angrily. For a few weeks, the debate was at the forefront of the cultural pages in the daily and weekly press. Eventually, in 1998, a collective and thoughtful reply appeared as a special issue of the quarterly *Alliage (culture, science, technique)*, under the title *Impostures scientifiques*, echoing that of Sokal and Bricmont's book and sending back the accusation. Let me summarize the counter-arguments to those of Sokal and Bricmont by referring to my own contribution in this issue, which dealt with three main questions:

1. *Who is responsible for the misunderstandings?* Philosophers and sociologists are not alone in their sometimes questionable understanding of physical and mathematical sciences. As a matter of fact, physicists themselves have often led the way towards these abuses, as can be shown by a detailed study of the so-called 'Uncertainty Principle' and other examples taken from modern physics.
2. *Do scientists understand the humanities better than philosophers, sociologists, and so on, understand science?* The lack of philosophical and humanistic culture on the part of scientists from the 'hard' disciplines makes them prone to pass equally arrogant and poorly informed judgements on the endeavours of social and human sciences.
3. *Should not scientists be encouraged to develop a deeper and more thoughtful relationship with language?* The present socio-political conditions of science production lead scientific knowledge to a permanent state of immaturity, inhibiting its epistemological recasting and favouring a careless relation to language. Science needs to recognize the fecund ambiguities of ordinary parlance, and cannot shun metaphorical expressions.

More generally, no criticism coming from the hard sciences and addressed to the softer ones can be valid if it is not first of all an auto-critique.[3]

## Science and French culture

You will no doubt have recognized in these arguments, grounded in an acknowledgement of the deep importance and relevance of language, a line of thought directly related to the intellectual atmosphere of France in the 1970s and 1980s, particularly as concerns the links between linguistics, semiology, sociology and philosophy. The widespread influence of this atmosphere explains why the 'science wars' never really developed in France. For, coming back to the historical account of the Sokal 'affair' (as it was called), it is striking that Sokal and Bricmont's book received very little support. It was publicly hailed mainly by a restricted group of ultra-rationalists writing in the review *Raison présente*, published by the 'Union rationaliste', and by the satirical journal *Charlie Hebdo*. Only one philosopher of science of some reputation, namely Jacques Bouveresse, took sides with Sokal and Bricmont. The popular and non-institutional scientific journals, like *La Recherche* and *Sciences et avenir*, while in general not very open to the philosophy and sociology of science, were very cautious and published mostly critical reactions to the book. Even more significant is the fact that practically no scientist, and certainly none of the most illustrious ones, claimed positions similar to those advocated by Weinberg in the USA. True, many physicists and biologists took advantage of Sokal and Bricmont's book to poke fun at their colleagues in philosophy and social sciences, but in a mostly private and rather childish and uneasy way.

This case study can, I think, be understood as evidence of the existence of what I would call an invisible, or latent, form of transdisciplinarity characteristic of French culture, invalidating C.P. Snow's diagnosis of the existence of two separate cultures.[4] Humanities, to this day, still exert a deep, if often implicit, influence on the French scientific community. But for how long, given the globalization of contemporary techno-science? That is the question.

## Notes

1. Paul R. Gross and Norman Levitt, *Higher Superstition: The Academic Left and its Quarrel with Science*, Johns Hopkins University Press, Baltimore MD, 1994.
2. Alan Sokal and Jean Bricmont, *Impostures intellectuelles,* Odile Jacob, Paris, 1997.
3. Jean-Marc Lévy-Leblond, 'The Mote and the Beam: Who is Blind to Whom?', in M. Carrier, J. Roggenhofer, G. Küppers and P. Blanchard, eds, *Knowledge and the World: Challenges beyond the Science Wars*, Springer Verlag, Berlin and Heldelberg, 2004, pp. 247–64.
4. See Jean-Marc Lévy-Leblond, 'Two Cultures or None?', *Proceedings of the Euroscientia Conference, Science and Technology in Europe: New Insights*, Rome, November 1997.