Lucie Mercier, Translation and Introduction to Michel Serres' 'Transdisciplinarity as Relative Exteriority',
Theory, Culture and Society 32 (5) 2015, pp. 37-44.

Introduction to Serres, 'Transdisciplinarity as Relative Exteriority'

> I am standing in the empty intersection between these two groups, in this space of which I am trying to speak the cartography. White space deprived of stakes and fights. (Serres, 1980: 17)

Partaking in what Patrice Maniglier (2011: 20) describes as the 'transversal adventure of thought' of the 1960s in France, Michel Serres' early works can be read as a series of internal displacements of one discipline by another, engaging philosophy into permanent decentring. At the convergence of Structuralism, Cybernetics and the history of science, Serres uncovered two principal transdisciplinary logics: one tied to idealities (abstract forms), the other to the empirical domain (concrete information). Since Serres is not only interested in relations between or across disciplines, but more broadly in the way information is conduced from one systemic entity to another, his 'transdisciplinarity' can also be described as a general theory and practice of *translation*, textual or empirical. Each of the *Hermès* volumes, which collect texts that Serres wrote between 1961 and 1980, shed a different light on the problem of trandisciplinarity. At times identifying a space, at other times, a specific relation between 'regions', each volume needs to be grasped through this double perspective. [1] Yet, when it comes to assessing Serres' conception of *trans*disciplinarity in any precise way, an important difficulty arises, stemming from Serres' tie to Leibniz's philosophy, and to Classical thought more generally. As a matter of fact, Serres voluntarily oscillates between the standpoint of *trans*-disciplinarity, and that of *a*- (or *pre*-) disciplinarity. Rather than straightforwardly 'acritical' (Latour, 1987), his philosophy subverts the Kantian 'limits' into a *topology of limits* as borders, points of passage and interactions. In other words the constitution of his 'transdisciplinarity' can only be unstable, constantly put in question by the change of 'scales' of these maps, by the transformation of the very entities between which relations can be established.

Serres' encounter with Leibniz's philosophy proved to be a watershed in his elaboration of the problem of transdisciplinarity, providing it with a structural and systematic framework. His doctoral thesis *Le système de Leibniz et ses modèles mathématiques* (1968) interprets

[1] The titles of the *Hermès* series can be taken as indications of this double outlook : whilst *Communication* (1968) *Translation* (1974), and the *North-Western Passage* (1980) refer to forms of relations, *Interference* (1972) and *Distribution* (1977) tend to configure the space in which these relations occur.

Leibniz's system as an 'exemplary architecture'. This structure is exemplary because it is fully coherent *and* fundamentally pluralist at the same time. Organised by a multiplicity of principles of coherence, it is not only made of analytic logic (formal language), but also contains a morphology, topology or aesthetics (language of forms). (Serres, 1974: 117) Besides the classical deductive sequences, Leibniz's system is constituted by a transversal logic of forms, which transcends the frontiers of particular areas of knowledge. Serres' demonstration relies on showing how Leibniz's mathematical models were translated through various regions of the Encyclopaedia, regardless of their eligibility for a higher principle of disciplinary partition (philosophy, biology, law, theology, …). At the same time, each of these models can be ascribed a fundamental transdisciplinary logic of generalisation, a capacity to produce transversal, total views of the system. In Leibniz's system, the 'inside' of any given region is fundamentally exogenous. Hence the concept of 'relative exteriority', in the passage we translate below.

By thinking the system as a 'structure' involving a multiplicity of 'models' Serres was problematizing the very notion of disciplinarity from a pre-critical point of view. Leibniz's multiple attempts at creating a 'universal characteristics' and a *mathesis universalis* are the most evident expressions of this. Prior to the segmentation of knowledge, representation, not yet under the glare of critique, constituted a liminal space from which to reason, a space where logics and analogy, the logics of science and that of images were knitted together in rigour.[2] But this 'prior' could as well be transformed into an 'after': behind his exegesis of Leibniz, Serres was in fact addressing contemporary science and its various transdisciplinary logics or 'state of interference'(Serres, 1972).

Another crux of Serres' early writings was to overcome philosophy's pretention to rule over the sciences and the corresponding assertion of science's autonomy. By claiming the autonomy of science, Serres was appropriating and generalising a proposition that had emerged from the philosophy of mathematics, and had been channelled through the French epistemological tradition since the 1930s. According to Jean Cavaillès ~~and Albert Lautman~~, the crisis of the fundaments and the birth of 'modern algebra' had revealed that mathematics possessed an autonomous becoming, thereby embodying a singular form of historicity (Cavaillès, 1960 & 2011: 65-70). As Serres would summarise, mathematics

[2] Serres' reflections on the *mathesis universalis* and the Classical Age were partly coterminous with Foucault's project in *the Order of Things* (1966), but his approach proved diametrically opposed to the latter: whilst Foucault consigned the Classical Age on the (distant shore) of an epistemic gulf, Serres claims to explore it from the inside, reactualizing it by following its various logics as guiding threads. For more details on Serres' critique of Foucault, see : *Hermès I, La Communication*, pp. 167-191. On Foucault's conception of transdisciplinarity: see Etienne Balibar's article in the present volume.

evolves by producing its own theory, each time inventing, by transversal generalisation, a new 'globalising' language, which nevertheless remains intrinsic to mathematics (Serres, 1968: 78-112). For him, every science 'speaks'; every science produces its own self-sufficient epistemology. By renaming epistemology a 'language', Serres highlights the internal or endogenous character of his *method*[3], by opposition to an overbearing conception of theory. He considers that transdisciplinarity or translation best approaches the movement of science itself: 'The *new* new [scientific] spirit is about thinking without reference; transport is thought itself.' (Serres, 1972: 15-16)

First published in *Hermès III, La Traduction* (1974), the following excerpt summarizes a number of these developments in a highly condensed way, at the same time as it marks Serres' shift away from structuralism. In this passage, Serres draws a general typology of philosophy's main ways of addressing, and situating itself towards, science. Whereas philosophy's relation to science remains generally caught up in a representational paradigm, or perhaps in what Althusser called the 'philosophy of seeing' (Althusser & alii, 1996: 35), the pre-disciplinary philosophy of Leibniz *speaks* science without discrepancy; in it science is not an object of knowledge, but a medium. In a surprising move, Serres thus inverts the history of philosophy: Leibniz's pre-critical 'naivety' unmasks the naivety of a critique of metaphysics that ends up restoring a new kind of philosophy in its place, rather than leaping into science. By 'transdisciplinary exteriority', Serres means a language that translates the knowledge of science into its own terms and truth conditions, a standpoint of transversal generalisation or structure, in other words, a structuralism. Formerly celebrated, this practice of relative exteriority, because it preserves an ineliminable discrepancy between method and its object, structures and the real, is now presented as structuralism's essential flaw.

[3] For Serres, « method » needs to be brought back to one of its etymological image : -*hodos* designating a way, a path, a means of access.

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Transdisciplinarity as Relative Exteriority (1974)
[On Leibniz and the Sciences][i]

Michel Serres

Does Leibniz practice the philosophy of sciences? How, in the first place, to define it? Where is it? What does it do? It is apparently any kind of theory of science. Yet a theory is primarily a spectacle, and looking at a theatre presupposes standing in a site exterior to the stage. Leibniz often uses the word theatre (for nature, for envelopments and developments of the living…), but never for science. He is one of the heroes of an action that cannot become representation without being altered, without losing its essence of direct action. He provides the only discourse that does not pretend, the only judiciary act where the judge must be party in order to give his sentence. Indeed Leibniz speaks *from within* science. He practices it.

In its relation to scientific knowledge, philosophy seeks a site from whence to speak about the encyclopaedia. But the latter, well constructed, speaks a language closed upon itself. Yet there are four and only four possible sites that philosophers have discovered, defined and practiced. One can gaze upon something from *above*, from *below*, from *the front* or from *the back*. Leibniz never adopted any of these points of view: he somewhat [somehow?] foresaw that all four were conceivable; he envisioned the alteration they could induce. He glimpsed that the only discourse on science was the discourse of science itself, that its definition could only be objectivised or thematised through its own course. These four sites define four types or modes of appropriation of science, four ingenious ways to acquire a property by illicit means – in other words, to gain a sovereign science without going through science as such.

Briefly, the first of these points of view is the Greek site. Metaphysics is the queen of sciences, in an overhanging, domineering position. Rigorous sciences are taken as propaedeutic to the dialectic ascension, they are initiatory. Philosophy is a bird's eye thought, a collection of generative and constitutive ideas. On the first steep slopes of the mountain, dwell a few geometrician or arithmetician slaves, or the child that the philosopher once was, in a world that he has long forgotten. The elevated site allows him to judge true from false, relevancy and opinion. Metaphysics is the toponym for site. There is a queen; she is normative. It is said [?] science, in a superlative manner.

The second point of view is the Kantian site. Philosophy, having become science, extricates the conditions of possibility of the encyclopaedic exercise. It unfolds layers and subterranean formations to be discovered in the act of the subject, or elsewhere. The geological, paleontological, archaeological metaphors display an orientation towards the grounding, the foundation, the origin. 'What does science rest upon?' one asks. Such chronology goes from Descartes to Kant, from Kant to Husserl and his epigones. The transcendental (or the historico-intentional) is the toponym for site. There is a ground, a constitutive ground. Philosophy is said [to be?] science, fundamentally.

The third point of view is the site of the Enlightenment. Philosophy projects in front of itself, in a dynamic of progress, the essence of the true. The horizon – where fields of attraction permanently polarize the history of science – constantly recedes. There is a speed vector and an acceleration vector, both oriented in the direction of history. It is a filter of true, of false, of the accident, of the essence, of the crisis, of accomplishment. 'What is science heading towards?' one asks. This chronology goes from the *Aufklärung* to Hegel. Teleology is the toponym for site. There is a *telos*, it is attracting [?]. Philosophy is the science of points of no return.

The fourth point of view is the site of modernity. The philosopher is a distrustful and lucid consciousness that cannot be easily fooled. He seeks out the almighty demon behind science. Behind the mask of knowledge and the expert language, the detective epistemology lays bare the class representation, the ideology in power, the *hic fecit cui prodest*, the unknown or unthought, impulsive or dominant. From Marx, Nietzsche, Freud to the contemporary, the reading techniques aim at a palimpsest: active writing stands behind activated writing. One asks: 'What is hiding behind this science, which performs scenes it doesn't exactly own? Who is the hidden engineer? Who or what is pulling the strings of these abused puppets, which in turn abuse us?' The approach is retroactive: to slip behind all effective knowledge, behind each and every thing, to constitute, in the tradition of the impregnable discourse of philosophy, a discourse behind which no discourse can slide. There was no higher, deeper or more prophetic discourse; there is now no more anterior, more archaic discourse. The philosopher sees the backs but he has no back. The retroactive is the toponym for site. There are *a tergo* forces; they are disruptive.

This law of the four cardinal sites brings us to the end of an adventure: that of the impregnable texts kept external to knowledge: the four pathways of domination. From

these privileged locations, the philosopher invariably remains one who can neither be mistaken nor mistake us. This could be a definition of God: the philosopher is the heir of priests. The scientist takes risks and confronts the dangers of non-knowledge. His endeavour is fallible; his discourse never goes beyond its self-imposed norms. Science is bound by its own law, it is a game bowed in front of the rules. Outside the field, outside the limits, the theoretician-spectator can always try to escape the rules, what he calls overtaking, his discourse unfailingly exceeds the norms he exposes. The philosopher is a subtle God, that no one can catch swindling. He plays offside. In the name of his privilege, he gives himself the right to speak the very contrary of science: recuse [challenge?] mathematics, immobilise the Earth, negate the thermodynamic principles, etc. Speaking of science, he does not speak science.

This can be refined. Each and every discipline of the encyclopaedic movement has served as a suppletive site, from which to speak of all the others. Just as God is at once transcendent and immanent, the philosopher is simultaneously outside and within. In other words, each of the sites mentioned is endowed with an *alibi*. The Trojan horse. Situated above, but leaning on mathematics; situated below, yet modelling itself on mechanics, astronomy or logics; situated ahead, but taking his values from biology or history; situated behind, yet referring himself to the humanities. The global discrepancy (*décalage*), generative of philosophical discourse, is accompanied by a local centring within the knowledge cycle. The dominant discipline is the courthouse or the courthouse's alibi. Philosophy remains the science of sciences, but might protect itself by means of a substitute: the region elected as the support for judgement and analysis. It is a small-scale science of sciences. Its selection in the encyclopaedia, its partition, are thus to be justified. They are, in general, induced by a history. How, may I ask, are we to grab by the tail what calls itself a mouse, but a bird an instant later?

In any case, the discrepancy is visible. The aim is to take distance from a knowledge that is thereby objectivised, to see it from outside, in order to stage it in a sovereign and untrapped theory. Possessing the knowledge without having its knowledge. Three types of discrepancy: absolute exteriority, outside of the encyclopaedia; relative or transdisciplinary exteriority; and finally, total substitution, where the philosopher starts to speak directly of the object, bracketing science. Ultimately, we are either dealing with metaphysics (the prefix is thus clearly defined), interpretation by means of a code or a superimposed filter, or a dream, in the manner described by Diderot. This is not a condemnation; dreams can be fecund or premonitory.

Let us eliminate distance, enter into the effective workings of science. Let its discourse speak. An attentive listener will easily hear its implicit philosophy. Is this really a method? Yes. A method is acceptable, not only when the organon which promotes or justifies it is rigorous, or when it stands on its own as a systematic or normative monument – hence the derisory efficiency of most traditionally taught "methods" (by efficiency we mean the ratio between results and the power of the constructed device) – but when it is fecund, here and now. A method is preferable by virtue of what it does, not by what it thinks. At stake here is not to speak of, around, about, on (meaning 'above') science, but simply to speak science, one science, this part, that theorem.

Translated by Lucie Mercier

[i] This text originally appeared under the heading 'Philosophy of Science' as the final part of the essay 'Leibniz Retranslated into Mathematical Language', in Michel Serres, *La Traduction: Hermès III* (Paris: Minuit, 1974), pp. 152–7. The essay summarises Michel Serres' 1968 doctoral dissertation on Leibniz, accounting for the relationship between Leibniz's mathematical thought and his philosophy as one of translation.