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The Essential Tension: Rational and Reasonable in Science and Philosophy

Paul Ghils, *Haute Ecole de Bruxelles (Emeritus); postal address: 51, rue des Carpières, 01170 SEGNY, France, Email: paul.ghils@skynet.be*

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"Reason and sentiment concur in almost all moral determinations and conclusions."
David Hume[1]

This paper discusses some aspects of knowledge adopted in European history, politics and philosophy, in contrast with its own past and with other cultural areas. Some conclusions from various subjects of research in social sciences are commented upon with a view to assessing the relevance of a transdisciplinary perspective.

Keywords*:* comparative philosophy, cosmopolitanism, dialogism, epistemology, global governance, language, logic, modernity, rationality, reasonableness, relational, transcultural, transhistorical, truth.

1 Introduction

Most cultures in the world were by tradition keen to stick to some form of truth, whether derived from experience, from intuitive knowledge or from beliefs in sacred figures. The history of science and philosophy has fluctuated between a formalized explanation based on reason and aiming at ideal truth, and the more uncertain quest for a more comprehensive understanding of human motives and drives (greed, fear, courage, or spirit), drawing on various disciplines into a coherent whole. The quest for an ideal-type balance is constantly challenged by the effective imbalance created by conflicting views between individual and collective interests, reason and emotion, but also between diverging rational views and opposite drives. Understanding, if not explaining those interacting forces, consequently calls for approaches that interweave disciplines, but also cultures and epochs.

Truth has always taken many different aspects, whose legitimacy is enshrined in natural phenomena, supernatural symbols or sacred characters. With time, such realities have suffered continuous and significant changes due to interactions among neighboring or distant cultures, the advent of new teachers or leaders, or the rejection of past traditions and practices. In the European philosophical and scientific contexts, these developments resulted into two crucial breaks.

First, the pre-Socratic era was associated with an idea of knowledge and philosophy which did not survive in later centuries, as Pierre Hadot has eloquently shown. As it existed and, more importantly, was practiced amongst the Ancient Greeks, philosophy was then inseparable from active efforts to determine what comprised a *bios*, a way of life, a method of being, rather than a field of study in which re-

membering its doctrine was the theoretical goal. So understood as *sophia*, wisdom, ancient philosophy was complementary with virtue and alien to what increasingly became the passive state of acquiring and possessing knowledge, soon to become scientific knowledge, for its own sake. As an active pursuit of the Good, it was inseparable from the very means employed to attain that goal. Socrates's declarations to his interlocutors of knowing nothing, in the writings of Plato, were the opposite of a body of work to subsequently be studied, commented upon, and taken up as a determined corpus of knowledge, but "merely a preparatory exercise for wisdom" which "tend[s] toward wisdom without ever achieving it" [2], a means of exercising freedom through the discursive method between the Master of the Academy and his disciples and auditors.

This "parting of the ways" is convincingly illustrated by François Jullien, who first applied comparative studies to Chinese philosophy on the one hand and European philosophy exemplified by Greece on the other hand, then to the historical split that occurred in ancient Greek philosophy between the archaic and the classical periods, when *sophia* and thought gradually crystallized into the philosophical search for truth, where *logos* lost its rhetorical function to be set up as the rigorous discourse of truth. In his successive books, Jullien shows that from that crossroads, the quest for truth has been adopted as an absolute method by science, to be finally standardized and universalized through globalization [3]. This method was based on the preeminence of reason in opposition first to the ambiguity of mythical accounts, later to the uncertainty of faith, sentiment and emotion. Locked up into its historical and epistemological context, reason initially distanced itself from myth to later fall back to it. The intellectual evolution of Europe took a rationalist orientation which culminated in the XVIIth century, nurturing a vision of *Cosmopolis* seen as a society rationally ordered similar to the Newtonian view of nature. While fueling extraordinary advances in all fields of human endeavor distributed in disciplines sealed off from one another, among which philosophy, this vision perpetuated what Stephen Toulmin called the "hidden agenda of modernity", referring to the delusion that human nature and society could be fitted into precise and manageable rational categories distributed into separate disciplines [4]. His analyses show how different the last three centuries would have been if Montaigne, rather than Descartes, had been taken as a starting point, showing that the Cartesian quest for certainty as intrinsic to the nature of science or philosophy is an illusion, exposing the rhetorical character of even the scientific discourse.

A second break in the history of ideas, albeit less significant in the history of science, can be detected in the development of another "parting of the ways" in physical theories, in the late 19th century, between the development of abstract relational sets or structures on the one side, and the concept of stable objects taken as an external world, which actually exists and is characterized by "true" theories, but cannot be directly observed. The two orientations are complementary, in that priority is given to representations by abstract sets or networks observed by active observers, or real entities posited by passive subjects. In the first case, what is observed is not predefined or predetermined, and is limited to relative identities determined by relational sets [5].

Another break, of an ethical nature this time, was the realization that the advancement of modern science could not be equated with human progress, despite its unquestionable achievements, did not put an end to its ambitions and did not halt its many developments. To take another example from history, the expansion of Europe that was made possible by the technological and geographical discoveries beginning in the 16th century had destructive effects since its very beginning, with the ecological damage inflicted by the transfer of germs, plants, and animals to the New World. According to historians' assumptions, the most drastic effect of European colonialism in the New World was not in the realm of social and political change but in the natural world. More specifically, the transfer of people, plants, animals, and germs from Europe, and vice versa, had a transformative and hugely disruptive effect on the local cultures and their economic viability in the Americas [6]. Rather than give credence to claims of innate European superiority and the like, Alfred Crosby explains the relative ease with which Europeans conquered the Neo-Europes as being a product of biological and ecological processes. According to them, one of the major contributors to European domination was disease, which is a natural byproduct of human interaction with animals.

To return to the status of knowledge, the quest for the an ultimate foundation, whether in natural

or human sciences, has continued well into the contemporary period and still fuels debates about the respective merits of stark truth and tolerant cognitive pluralism, and the idea of a final explanation of the Universe by hard science. However, the decline of this assumption does not eliminate the implied question about the assumed "universality" of knowledge, science and philosophy, even if science has undoubtedly become a global concern of human history. This also raises the question whether the cultural context was relevant to the origin of science and, at the other end of the spectrum, the significance of knowledge and the social and political impact of human action eventually derived from science and technologies, an indirect consequence of the former question. For some time now, serious concerns have been expressed about such implications, particularly through civil society initiatives such as the *Bulletin of the Atomic Scientists, Medicine, conflict and Survival* or the association of *Concerned Scientists*. Parallelly, the first two points are being revisited, as both science and philosophy have taken more precautionary approaches about anything concerned with such concepts as "truth" or "foundation", implying that the autonomy of science and scientists and the objective reality supposed to justify research and technological innovation are also questionable. The threat of a nuclear war and the actual use of bombs dropped on Hiroshima and Nagasaki first made physicists conscious of their social and political responsibility, and the pervading effects of scientific knowledge, technological applications and human impacts on the ecosystem have reduced to very little the myth of free science and neutral technologies. A different picture has emerged from the interactions between social, political and natural regularities, bringing new relevance to the strong linkages between *cosmos* and *polis* as part of a global and complex *cosmopolis*.

2 Incommunication

Further to the autonomy/heteronomy of science, the expression and understanding of scientific theories should be considered, whether in natural or human sciences, as well as its perception and dissemination in ordinary communication and lay opinion. Among those which are worth mentioning to illustrate the gap between scientific theories and their translation into ordinary language, the experiments carried out at CERN (European Organization for Nuclear Research) near Geneva, the world's largest ever physics experiments, offers a striking example. It is interesting to note here that the (provisional, as is usually the case in labs) conclusions have generated misunderstandings, such as the confusion between physical time and the human perception of time, the misinterpretation of a rereading of Einstein's relativity and the reformulation of the speed of light, or the elusory interpretation of a physical explanation of the big bang as the discovery of the origin of the Universe. One physicist working with the organization, Etienne Klein, explains that time meant nothing more than its mathematical representation, i.e. just a letter t. which differs from time as we imagine and experience it through ordinary discourse. Considering such ambiguities, physicists are reluctant to translate their findings or hypotheses in ordinary language: when experiments in a physics lab showed subatomic neutrino particles breaking what Einstein considered the ultimate speed barrier by traveling a fraction faster than light, did this lead to falsifying, or just reformulating Einstein's theory to account for the limit of light speed within a broader theoretical framework? Etienne Klein does not shrink from talking about "selling metaphysics" considering communication and its common assumptions as rhetoric, if not sophistry, in any case as meaningless discourse [7].

The same could be said about the chain of metaphors supposed to build up a "natural logic" like that of Schrödinger's cat to account for two simultaneous phenomena in quantum physics, or the contradiction in terms that appears in "Heisenberg's principle of uncertainty" to actually express what is more accurately described as the concept of indeterminacy (the relative indeterminacy of quantum particles' positions to the precision with which their momenta can be measured). Another example is the origin of the Universe (point 0 in general relativity), in so far as the big bang as a scientific concept cannot be translated in ordinary language, because the latter is not the "zero hour" or the origin of the Universe, but a given moment corresponding to a initial state with maximum density. As a matter of fact, the idea of origin implies some previous nothingness, an unthinkable concept that destroys itself. Any potential explanation would presuppose a preceding vacuum state from which it would have emerged, something equally unthinkable. This is why the point zero of time and space as used in mathematics

has no significance in physics, where it does not appear in equations because it just describes the first moments *after* the Big Bang.

3 Science and Culture

To return to the interplay between scientific knowledge and its cultural or historical context, the Chinese history of science is not without relevance to an adequate perception of its European counterpart. Although the Chinese admit that it originated in the West, they frequently ask the question: why was it not born in China? The common view is that in Antiquity scientific knowledge was of equivalent advancement, if not status. It was not until Western Renaissance when science began its rapid expansion, at a time when China was still stagnating because of its propensity to study the human mind or heart (*Xin*) and innate nature (*Xing*). Ever since, the gap widened further until the recent policies set up by successive authoritarian governments. Joseph Needham would not disagree with this assumption, showing that Chinese science was steadily developing in ancient China, whereas Western science was proceeding by leaps and bounds, unlike the stable and continuous course followed in China [8]. Incidentally, this may have been one of the reasons for the Western ascendency over the Middle Kingdom. Furthermore, the assumption that science was born in a given cultural and social context should not exclude some features associated with them, which is the particular concern of this paper. One remark in this respect was made by Isabelle Stengers and Ilya Prigogine who, even though the scientific journey is undoubtedly international and transcultural and is based on rational criteria belonging to all, remind us that its European impulse cannot be dissociated from such serious issues as the intricate interactions between scientific knowledge, industrial development and democratic choices [9]. The scientific enterprise as such consequently includes specifics of culture and history, in this case instability, conflict and philosophical dissent. As these two philosophers of science say, "... without the extraordinary faith in the powers of human reason which undermined the legitimacy of institutions and traditions, and ultimately resulted in the revival of the European idea of democracy, how would a few thinkers with no personal power have succeeded in setting the Earth in motion despite the triple authority of our senses which make us feel it as motionless, of the Scriptures and of philosophy, and in having recognized the autonomy of a research method accountable to no other authority than the scientists who took part in it?"[10]

The interacting components of rationality are differently exemplified in the Indian cultural area, in so far as perceptions of rationality cannot be limited to epistemological aspects but should also include interactions with social and political dimensions. To take just one example from the wide array of philosophical and logical schools, the Jaina logic developed by the 2nd century philosopher Kundakunda included the following ingredients: an ultimate distinction between "living substance" or "soul" (*jiva*) and "nonliving substance" (*ajiva*); the doctrine of anekantavada, or nonabsolutism (things have infinite aspects which no determination can exhaust); the doctrine of naya (there are many partial perspectives from which reality can be determined, none of which is, taken by itself, wholly true but each of which is partially so); and the doctrine of karma, in Jainism a substance, rather than a process, that links all phenomena in a chain of cause and effect. As a consequence of their philosophical openness, the Jaina logicians developed a unique theory of seven-valued logic, according to which the three primary truth values are "true," "false," and "indefinite" and the other four values are "true and false," "true and indefinite," "false and indefinite," and "true, false, and indefinite." Every statement is regarded as having these seven values, considered from different standpoints. It should also be noted that the intercultural dimension is not absent from scientific and epistemological developments in India, as their peculiarity did not prevent Arab thinkers like Alberuni from having a large number of Hindu collaborators with whose help he mastered Sanskrit and studied contemporary Indian treatises on mathematics, philosophy, astronomy, sculpture, and religion. His work had great influence in continuing the Arabic studies (well established by the eighth century) of Indian science and mathematics, which reached Europe through the Arabs [11].

As a whole, what can be concluded from comparative studies is the peculiar orientation taken by European science as focusing on ideal values and models. François Jullien illustrates this from a Chinese viewpoint, where "ideal" appears to be a European word, whether in English, German, French, Spanish, Italian, and also in Russian or Polish. Referring to Xunzi

among other thinkers, Jullien notes that speculation is usually rejected as a way to understand nature, time or the Universe. In contrast with the Western method imposing a mental model, a plan, on the chaos of life, and striving to the utmost to make the chaos fit the plan, the Chinese approach tends to build a unitary notion different from Platonic idealism immune to the emotional dimension, the "idea" to be discovered as the ultimate truth [12]. The former method, favored by the Chinese, seeks a relation between conditions and consequences, whereas the latter establishes the relation of means to ends with which the West is more familiar. Among the illustrations of these contrasting logics, Jullien refers to Chinese strategists, who consider that a situation evolves in such a way that, if one allows oneself to be carried along by it, the effect results naturally from the accumulated potential of the situation. Such a strategy no longer needs to choose between means or to struggle in order to attain an "end." He opposes the logic of model-making founded on the construction of an ideal end commonly practiced in a Western approach to the dynamic logic of a process. In the former the process is closed, and its result implicit in its evolution, while in the latter the causal system is open and complex, and an infinite number of combinations are possible. The efficacy of the two logics can be assessed through the ways in which success is perceived: as inevitable on the one side, as hypothetical on the other [13]. As Xunzi said: "If I know my opponent and I know myself, in a hundred battles I have nothing to fear", meaning that if I know enough about the relationship of forces between my opponent and myself, I can insist on not joining battle until such time as I am certain that the potential of the situation operates completely in my favor [14].

4 The Fluctuations of Scientific Knowledge

If we take the varying approaches mentioned above in a coherent whole, we can adopt new definitions and methods reflecting fundamental changes in the ways scientific is being produced in social, political and cultural fields. The resulting traits will be complexity, hybridity, non-linearity, reflexivity, plasticity, heterogeneity, and transdisciplinarity, as rightly observed by Michel Maffesoli [15]. As to the components and objects of knowledge, a first effect is that the interplay between disciplinary competences is the inclusion in research methods of a mixture of reason and emotion, hate and love, certainty and uncertainty, predictable and unpredictable data. Of course, the initial landmark of social sciences as autonomous disciplines was first the recognition of reason as a prominent criterion to establish its scientific status.

To take political science and more specifically the discipline of international relations as another case in point, I will cite the classical Treaty of Wesphalia in 1648, which put an end to the Thirty Years' War, one of Europe's most devastating, longest series of wars involving most European countries, and was deemed to provide a rational structure to the anarchic world of European polities. It was also history's first great international (the word did not exist yet) congress, held to settle what had been a deluge of emotions that engulfed European societies to the point of exhaustion. What should be retained from this is that three centuries later, students of international politics are still learning that states and governments are applying rational rules to keep irrational emotions at bay. In so doing, "scientific" realism as a political theory is still following the path opened in the 1850s by other social and human sciences, such as sociology with Max Weber (1864-1920), who rejected the historicist and descriptive methods and argued that social research proceeded by abstraction and generalization in the same way as natural sciences, or Ferdinand de Saussure (1857-1913) in linguistics, applying the same method to establish language as a scientifically defined object of study, the fixed "langue" as opposed to a flowing "parole". As Richard Ned Lebow remarked, "this method could apply not only to external behaviours, but also to the underlying motivations. Whereas the researcher's attitude was value-bound, the method of social research was value-neutral," [16].

The same applies to morality is based on an 'ontological' conception of the world: phenomena, situations, identities that are intangible and sure of themselves. By contrast, plural ethics are essentially changing and provisional. Still, rather than deploring this mobile, uncertain, non-institutional side of the phenomena in question, can we not see in it the expression of an authentic, full humanism, a conception of the human that is dynamic, including both its constructive and destructive aspects. To take an instance of this debate in political science, the con-

flicting views about what is posited as rational and what is described as reasonable or irrational may generate competing theories of international relations, granting priority to rational sovereign states as sole actors, or opting for pluralist constructivism with a plurality of actors where non-state agents and subjective factors play a significant role. The model of Cosmopolis advocated in the 17th century as a natural outcome of both the origins and the prospects of the modern world evoked phenomena concerned with "being", and were driven by the quest for a rational, specific substance: God, the State, the Institution, man, rights. Its distant origin can be traced back to Plato's claim that the world exists independently of our mental categories and that man's only possibility is to find out "truths" our there waiting to be discovered. This conception still thrives in contemporary political theories, specifically in the discipline of International Relations. Although conventional realists, following Hans Morgenthau, Kenneth Waltz, Raymond Aron and others who acknowledge that there are many actors other than states, and that states engage in all sorts of economic and social interactions which have nothing directly to do with creating a balance of power, their basic argument remains determined by two essential principles. First, these interferences in non-state fields of activity do not undermine the basic assumption that in the absence of effective world government the international system is anarchical. Second, even if Waltz denies that he makes any kind of assumption about the rationality of states, most of his successors do assume that because states want to survive they will act rationally to increase their security, despite the paradoxical assumption since Hobbes that the security of individual sovereign states implies the absence of security, or anarchy, in international relations [17].

Opposed to these theories, the sociology of international relations has turned to the plurality of actors with different motivations, whether rational or not [18]. Far from sticking to the monologic of states posited as rational actors, theorists of the field have proposed operational definition of non-state actors in different veins, as referring to renewed conceptions of Cosmopolis, to social life organized according to inter/transnational civil society with its own logic, especially the logic of association, to supply its own economic, cultural and political dynamics, or a mixture of all those. Despite the four-century oblivion to which it was consigned by the Cartesian program of modern scientific disciplines, rationalist theories have consequently be questioned by new or updated ideas reappearing in the recent attempts at founding a cosmopolitan law, actually a counter-trend in international law developments. Today, the resurrection of the Janus-faced concept of humanity and human being is at the center of the international law of human rights, which culminated with such regulatory instruments as the International Criminal Court founded in 2002. These legal instruments cannot be get rid of if we want to channel the shaping of a transnational society diversely defined in terms of cyberspace, scientific and technological rationality, international democracy or global civil society. A distant echo of the Stoic views, the adoption and implementation of a universal jurisdiction by "like-minded" states conceived of as standardized identities highlights the continuing relevance of basic transdisciplinary concepts such as human being and humanity. Considered from such perspectives, the current inter/transnational landscape sends social and human sciences back to the intellectual inquiries with which Montaigne was familiar, before René Descartes separated nature from humanity, reason from emotion, and distributed knowledge into autonomous disciplines. Descartes' rationalist system establishes philosophy and the sciences upon a secure metaphysical foundation, exemplifying an attitude characteristic of the Enlightenment, whose basic tenets are that the investigator ought to doubt all propositions that can be doubted – short of the existence of God, whose cosmic plan was to be explained thanks to the new philosophical method – with no other authority than the researcher's own conviction, subjected to rigorous skeptical questioning. As strongly expressed by Stephen Toulmin, "The culture and society of 17th century Europe were transformed by changes that set aside the tolerance of late Renaissance humanism for more rigorous theories and demanding practices: these changes culminated in the new cosmopolis built around the formal structure of mathematical physics," [19].

By contrast, Montaigne's perspective would be better illustrated today by a "geopolitics of emotions" [20] including some specific affects rather than reason only. Peter Sloterdijk, to take one of the leading contemporary thinkers, refers to the suggestive alliteration of Zorn (anger) and Zeit (understood here as historical time), displacing Heidegger's magnum opus from 1927, *Sein und Zeit*. Firstly, Sloterdijk

connects anger, and not being, with time, displacing the terrain of the investigation regarding the essence of time from ontology to something like a philosophical psychology, focused on a very specific affect. Secondly, whilst Sloterdijk presents anger as what Heidegger would have called a "fundamental attunement" (*Grundstimmung*), or an affect that reveals a fundamental situation, whether existential or historical, Heidegger himself never identified anger as one such mood. Thirdly, the title itself seems to suggest that in order to understand time, our time as well as our conception of time, and both are at issue in Sloterdijk's book as we need to turn to anger not as one mood or affect amongst others, but as the most adequate and defining affect, here considered as a way into the implicit dynamic of European history [21].

True, in ancient times hegemony came before balance in so far as hegemony, in the guise of empire, meant order, culture and civilization. The outside world, for both Europeans and Chinese, was peopled with barbarians, equated with chaos and instability. However, if empires have generally been static, they have also protected a degree of plurality in their ethnic and cultural composition from the start. This is due to many factors, among which the very extension and variety of occupied or controlled territories, which made it impossible to standardize or homogenize cultures, languages and political power. This fragmentation, or more positively the encounter between so many peoples, may have contributed to the cosmopolitan idea, i.e. the idea of human beings as citizens of the world understood not as an idealized building block in a European representation of the Universe, but as a complex, asymmetrical pattern calling for a wider perspective capturing the interactions between the variety of actors and factors involved. The underlying vectors of tensions associated with such an imbalance can be related to both the quest for an emerging world order and the chaos resulting from competing models of world order. The set of actors and factors so constituted may refer to state interests and community values, local and global views, moral and legal norms, charitable and economic aims simultaneously, calling for an inevitable cross-disciplinary outlook.

5 From Pre-Modern to Modern to Post-Modern

It should be noted here that, far from this notion of a potential, complex and plural world order, the United Nations is an illustration of the traditional system of "modern" states, following Machiavellian principles and a realist behavior of strict sovereignty and raison d'état, in an attempt to establish law and order according to the principles enshrined in the UN Charter. However, this also means that its aims to maintain order by force is strictly limited, the veto power ensuring that the UN system does not infringe on great powers' interests and privileges, destroying by the same token its original aim of considering all states equal. Although the UN was conceived to stabilize the order of states, it did not create a fundamentally new order, notwithstanding some developments since its inception. In a way, the collective-security element of the UN Charter represented an attempt to throw the weight of the international system behind the *status quo*, so that the international community as a whole would become the balancing actor in the balance-of-power system. Nevertheless, in the absence of any obvious alternative the interstate system has survived, and what emerged in 1945 was not so much a new system as the culmination of the old one, with the old multilateral balance-of-power in Europe becoming a bilateral balance of terror through deterrence.

In contrast with the modern system epitomized by the UN, the European model is the most developed example of a new rationality, variously called postmodern, postmodern or transmodern. Based on interdependence, the EU is more a transnational than a supra-national system, a voluntary association of states rather than the subordination of states to a central power. Abandoning the ideal of a "European state" or "European empire", it rests on the assumption that nation states are fundamentally unsafe and that the only way to tame the anarchy of nations is to impose hegemony on them. However, if the EU considers the sovereign nation-state as a problem, the super-state is not necessarily a solution. The postmodern system does not rely either on balance, as it does not emphasize sovereignty or the separation of domestic and foreign affairs. On the contrary, the EU has become a highly developed system for mutual interference in each other's domestic affairs. In the field of defense, under the CFE Treaty parties

have to notify the location of their heavy weapons and allow inspections. The shared interest of European countries mirrors the paradox of the nuclear age where to defend itself a state had to be prepared to destroy itself, overcoming the strategic logic of distrust and concealment. Instead, it recognizes such characteristics and practices as mutual vulnerability, mutual transparency, the breaking down of the distinction between domestic and foreign affairs [22], mutual interference in (traditional) domestic affairs and mutual surveillance, the rejection of force for resolving disputes and the consequent codification of self-enforced rules of behavior, which naturally translates into the growing irrelevance of borders [23].

In other words, the creation of this post-modern, post-national system is the recognition that Europe is not an empire in the conventional sense, but both a supra-national and transnational organization which brings order but rests on the voluntary principle confirmed in the Lisbon Treaty stating that any member state can leave the EU, as a consistent alternative to the fact that "there has never been a European empire" [24]. Thus conceived, a plausible explanation for this novel fact of international life is the hypothesis of the non-empire, an oligopolar transpolity and quasi-polity, if the comparative method is to ascribe some significance to European history. Again, the feature appears more clearly when situated in a comparative historical perspective: the political fragmentation and cultural pluralism that characterize Europe can be contrasted with China, where competition and conflict between several of the great kingdoms during the fourth and third centuries BC gradually made way for a rational theory of State power aimed at strengthening the military and the economy by concentrating all power in the hands of the prince. As Jacques Gernet notes, this centralization was accomplished by eliminating the power of the old hereditary aristocracy, setting up instead an independent administration run by objective rules and regulations, hierarchically ordered and whose tasks were rationally distributed among various specialized services subjected to regular control and exercising in turn direct control over all the territories [25].

Obviously, the idea of empire still survives in Europe in the image of peace and order through a single hegemonic power. The former dreams of the restoration of Christendom has given rise to proposals for world government which would emerge from the United Nations, and calls for a United States of Europe. But the UN was never intended to be a cosmopolis of this kind, as it strictly preserves state sovereignty and has no democratic constitution, and the EU project is not comparable to the United States of America. The Federalists at the end of the eighteenth century in Philadelphia were engaged in *inventing* a new political regime without historical precedent, whereas more than two hundred years later, the EU is both to *conserve* the democratic achievements of the nation-state and design, beyond its own limits, what Jacques Delors called a "non-identified political object" heir to a long-established practice of constitution-making, for which the future of Europe is more the province of economists, sociologists and political scientists, rather than the domain of constitutional lawyers and political philosophers [26].

For its part, even if the state is assumed to be the sole rational actor, we should admit that it no longer fulfills Weber's criterion of having the legal, let alone legitimate, monopoly on the use of force, in so far as it has in the past abused that monopoly. In other circumstances, it may be a fragile structure whose authority is not only restricted by commitments under the UN Charter to refrain from the threat or use of force against the territorial integrity or political independence of any other state, but also undermined by complex urban and industrial societies organized in private networks, whether nonprofit (civil society organizations) or for-profit (corporate players). The so-called failed states may even be completely overwhelmed by drug trafficking, criminal networks or terrorist syndicates using non-state (that is, pre-modern) legal instruments to weaken states and interstate organizations. As a result we have, for the first time since the nineteenth century, a *terra nullius* between anarchic globalization, demised or powerless states and unofficial syndicates operating without hindrance.

6 Pragmatist Alternatives

In other sectors of social sciences, the quest of rationality and scientific truth has been equally undermined by Thomas Kuhn's thesis that successive scientific paradigms develop in history on the condition that they can reach consensus and are not opposed by some ideological or institutional obstacle.

Paradigms, a term and a concept Kuhn apparently borrowed from Gaston Bachelard [27], were justified by the need to protect scientific knowledge from opinion so as to guarantee the transference of a community's paradigm, a move radicalized by Kuhn who considers that a paradigm is so much attached to a given community that it becomes internalized and invisible. Logically, a crisis occurs in a discipline when the paradigm becomes self-reflexive and a subject of debate and the community is no longer in a position to remain immune to criticism and controversy [28]. The scientific truth principle was further weakened by Karl Popper's thesis that no scientific theory is definitely valid as it is always and necessarily open to falsification. The principle of contradiction can thus play an empirically active role to that end, as a rational motivation to revise theories, which will be eliminated as soon as a new and more adequate theory has been chosen [29].

In the field of social sciences, pragmatism appeals primarily to those researchers who understand the many limitations of positivism but are nevertheless committed to a scientific approach to the social world. Often accused of a "physics envy" associated with objective truths as allegated by Lebow against political scientists [30], many contemporary social scientists turned to what I would call a "polis envy" to respond to such attacks, but also as a consequence of the increasing complexity of data collected in all subject matters, from anthropology and linguistics to sociology, psychology and cognitive sciences. Confronted with variable and unstable contexts, pragmatist theories reject scientific objectivism associated with abstract objects and binary logic, in an attempt to reconcile social, cultural or global data with the more homogeneous or universal knowledge associated with biological or genetic processes. In so doing, they also try to preserve the unity of science and the autonomy of individual disciplines, at the same time as hard science itself, and notably physics, are retreating to a more modest position freed from the search for an absolute truth. Remembering that Kant had already stated that knowledge of synthetic *a priori* truths about space and time is only explicable if they are formal elements of sense-experience rather than properties of things themselves, we should not be surprised to hear that quantum mechanics has established, with Bohr, Pauli, or Heisenberg, that isolated, ideal objects as understood in conventional metaphysics do not exist as such in quantum physics in so far as the observer and the object are never separated but are interacting within a relational, coherent set of events [31].

7 Language as a Relational Set

Considering these new epistemological openings, it may be surprising to find that the older method based on ideal, metaphysical knowledge continues to flourish in contemporary social science. The best known case is probably the genetic determinism extended to language. Once the most celebrated advance in social sciences, Noam Chomsky's linguistics formalized a theory grounded in biology, describing universal grammar as a "hypothetical component of genetic inheritance applicable to any language" [32]. The relation between the assumed innate language organ, or device, and the languages we acquire is seen here as no more than the adjustment of parameters. Even though Chomsky says he never uses the term "inneist hypothesis", which is said to be used only by his critics like Hilary Putnam, it would not be surprising since his epistemology is literally "natural" [33] . The ideological function of the language device is reduced to turning its neural substratum into absolute determination in a first stage, which makes the study of language a monodisciplinary subject first reduced to psychology, and second to biology [34], including the more recent functionalist and cognitive theories. In formal terms, this translates into the axiomatization of an autonomous syntax, the transformational generative grammar (TGG), entrusted with providing models for other processes of cognitive psychology such as visual perception and other models relating to the processing of external stimuli, based on the fundamental properties of learned cognitive systems and mechanisms used for acquiring and applying such systems [35].

In a second stage, the conception of a "mental organ" central to cognitive structures will confirm the demise of language as the subject of an autonomous linguistics, causing this science to be dependent, beyond psychology, on biology or neurosciences. Finally, both operations will lead to mentalism as a further step to the annexation of psychology and linguistics by physical sciences [36]. Language as a central of philosophical enquiry is then identified with the mental content of an ideal speaker-hearer in a completely homogeneous speech-community stud-

ied by a new fashion philosophy of spirit, later to be translated into the homogeneous *mind-brain* research topic as the TGG was evolving into a scientific theory of the substantialist family. In philosophical terms, this meant that the intellectual climate had entirely changed since the 1960s, empiricism was now submerged by rationalistic assumptions, linguistic or social systems were no longer understood in internal terms to make comparison possible, and particular aspects or traits of a system could be definitely isolated to outline a universal structure for language and cognition. It marked the return to Max Müller' claim in the 1860s that linguistics was a science whose methods were comparable to those of geology, botany or astronomy: "The science of language, one of the physical sciences" [37].

These epistemological tenets suggest, rather than an epistemological revolution, what amounts to a step backwards can be traced back to an older scientific and philosophical Western tradition: arguing the necessity for postulating innate ideas to explain the possibility of language, generativists, in the same way as immanent language for structuralists, convey Platonic conceptions that man is inhabited with true opinions about realities he does not know or he has not learnt yet. To the extent that some followers of this school, invoking Frege's Platonic doctrine initially conceived as an antidote to psychologism [38], engaged in a declaration of loyalty to Platonism. Jerrold J. Katz, one of the staunchest defenders of Chomsky's school, first supported psychologism or conceptualism in linguistics [39], according to which linguistic theory is identified with the theory of knowledge of language, and later mentalism [40], then rejected in favor of (Platonic) realism, according to which languages are abstract objects considered for themselves independently of our knowledge of them [41]. He described this change as follows: "I had been wondering about how well Frege's realism about senses, to which I was committed, squared with Chomsky's psychologism about language, to which I was also committed. I reached the conclusion that ... a theory of abstract senses could not be fitted into a theory of concrete syntactic structures in the human mind. My solution was to adopt a realist view of grammar as a whole, a move that seemed the right choice in light of the fact that the words and sentences that grammars are theories of are plausibly regarded as types and hence as abstract objects," [42].

On the formal side, Chomsky's method is one of the most systematic endeavors to transfer logical principles into linguistic theory, provided logic is restricted to classical logic, as he rejects all non-classical or paraconsistent logics commonly used today to represent language and cognition processes in pragmatic contexts [43]. His method is radical if compared with Pos's position, a logician who inspired his work but restricted the link between logic and language to an analogy, whereas Chomsky bases both systems on a structural identity, making therefrom the concept of grammar "correctness" a derivative of the principle of logical generation which defines true and false [44]. We can recognize here the bivalence that characterizes Chomskyan linguistics as based on the classical binary logic since, as Chomsky clearly says, the logic of language "is" classical logic (with variables, i.e. the predicate calculus), and not some intentional logic (with no variables). However, some critics have noted that presenting the TGG as an instrument to "explain" the speaker's competence in the same way as theories in physics explain physical phenomena is a serious logical mistake. Indeed, theoretical physics as a predictive tool is analogous to Chomskyan performance (actual speech), whereas compe-tence (assimilated with physical theory) has never been presented as a theory of performance [45].

Again, as propositions are independent from empirical verification because they are based on concepts of necessary and universal concepts, Chomsky's logic is far from engaging in any "revolutionary" epistemology but rather goes back to the idealistic tradition of Western philosophy faithful to classical, binary logic at a time when most of his colleagues in linguistic pragmatics have long lost their interest in this logic and opted for "adaptive" logics and the forms that better explicate dynamic reasoning, a central concern today for philosophy of science and epistemology. Although Chomsky refers to the empirical adequacy of a formal universal grammar to actual languages, with a view to opposing the empiricist thinking that dominated the 1950s [46] exemplified by Leonard Bloomfield behaviorist psychology and linguistics, but also Edward Sapir's and Benjamin Lee Whorf's anthropological and comparative linguistics. His reference to Saussure is more ambiguous and will be used, in a first stage, as an ideological weapon against American structuralist behavioralism, then departed from it to enhance his

own original approach defined as generative and subjectivist. Part of the explanation for such a return to reifications constructed on models recalling Platonic Ideas or the Aristotelian forms is a response to language theories drawing on the social or cultural environment, including later pragmatic approaches based on Austin's speech acts, Sperber and Wilson's Relevance Theory, theories of discourse arguing that interaction with other speakers is the critical dimension in learning language, or Vygotsky's psychology, which argues that all cognitive processes, including those involved in language, arise from social interaction. Chomsky also opposed the kind of constructivism elaborated in Jean Piaget's psychology, as illustrated in the famous Royaumont debate in 1975 between Piaget's and Chomsky's followers. The initial tenet inspired by rationalism ascribes no intrinsic structure to the environment, because any law of order belongs to the subject. In Piagetian terms, this means that of the two terms of equilibration – accommodation and assimilation – only the former would be maintained, but it would be entirely and absolutely controlled by the subject. Additionally, in Piaget's theory there is no need whatsoever for an innate language device, due to the fact that neural structures and psychological processes are entirely sufficient to account for cognition and language [47]. In a way, the language device refers to a hypothetical mechanism, possibly genetic but which would then describe no more than a sub-linguistic mechanism and could equally underlie non-linguistic processes. This view is supported today by comparative research on neural substrata of language and music, showing that similar (as well as distinct) processes are active in understanding language and in perceiving music. Concerning language, an interesting finding is also that cognitive operations associated with meaning are specific to semantic treatment, i.e. distinct from syntactic processes, which clearly appears not to cover the whole of language neural mechanisms. Although the latter differ from those used to treat melodic and harmonic structures, it is equally relevant to note that the treatment of some syntactic dimensions of language is associated with electrophysiological processes similar to those implied in the treatment of certain harmonic aspects of music. This means that syntactic functions of language and harmonic functions of music may be governed by common mechanisms which analyze the structural features of a sequence of organized events, whether they are part of a sentence in speech or accords of a melody. Similar conclusions have been made when comparing aspects of prosody in language and rhythm in music, all of them supporting Piaget's view that language cannot be reduced to a specific language device, but that common, deep mechanisms underlie different cognitive functions [48].

8 Return to Reason

True, contemporary researchers have brought more experimental data to support the theory of inborn competences, like the famous FOXP2 gene supposed to be the core of language structure [49]. The strong impact of the rationalist model still prevalent in social sciences in the 19th century culminated in the demonstration by Berlin Kay of the language-independent saliency of "basic colors", which was taken as a decisive anti-relativist finding, and effectively terminated investigations into the Sapir-Whorf hypothesis conceived from historical roots. Although some recent studies based on non-industrialized societies still contest the existence of cross-linguistic universals in color naming, suggesting that color categories may not be universal, comprehensive objective tests have been conducted to resolve this issue, concluding from data from languages of both industrialized and non-industrialized that strong universal tendencies in color naming do exist across both sorts of language. However, the power of the genetic explanation declined as research was refining its findings: Evelyn Fox Keller argues that the very success of genetics has radically undermined its main thrust, the very gene concept. Originally presented as the driving force in the faithful replica of genetic traits from generation to generation, the stability of genes was actually hiding a great number of enzymes contributing to metabolic networks. Crick's central dogma in 1957 that "DNA makes proteins, and proteins make us" has gradually been questioned as the gene was reformulated in dynamic terms to account for the chromosome structure on which it depends and on its developmental and cytoplasm environment [50].

Universal language standards can also be officially imposed, in contrast to ordinary language in which form and content make up a unit usually created unconsciously, establishing an artificial "universality". In the field of natural sciences and technology, the aim of terminology is to oppose any free play of

language and for scientific communities to agree on unified (standardized) concepts and terms endorsed by an authority such as a national or preferably international standardization institute. So conceived, the analytic concept theory in terminology science is another instance of an infinite regression to Aristotelian philosophical ideas, consisting in defining concepts as the result of the necessary predications of referents and being represented in a term or name or conventionalized in a sentence stating the characteristics in their relationships. This conception ascribes to concepts a universal role in recognizing and constructing the world and is objects, categorizing and classifying them, while at the same time considering concepts as "units of communication" in the semiotic sense, summarized in definitions based on the classical logical equation *definiendum - definiens* [51]. The basis provided for dealing with the concepts formed and used in science and technology is a form of objectivism, which posits the existence of independent objects, regards our consciousness as a passive recorder of data. Its language of observation should, then, designate aspects of observable physical relations and events taken as valid for all possible referents belonging to a given class, consequently rejecting any contextualization for the purpose of elucidating the meaning of concepts. In line with the physicalist programme of the Vienna Circle, this view implies that the unity of science is reductionist in the sense that the observation of objective realities in makes it possible to build a uniform language of description (based on logical empiricism) that can be applied to the human sciences as well [52].

Obviously, this position has long been questioned by epistemologists not only in the field of the human sciences, but also in natural sciences, one assumption being that some events are intrinsically paradoxical [53]. Critical theorists in both fields have also argued against the validity of an independent, context-free facticity that provides the basis of assertions that are true by virtue of correspondence. The Frankfurt school and other philosophers influenced by the interpretive tradition of inquiry argue on the contrary, that human experience is apprehended on the basis of categories that have meaning in the cultural context of the analyst/observer. Experience is thus always contingent on the normative standards that are presupposed in the possible selection and constitution of "facts" [54]. Resorting to "open-textured" terms and concepts in relation to empirical theories [55], or to non-standardized terminologies in the social sciences, are two attempts among many others to deal with conflicting views of conceptual analysis. The aim is to integrate opposite assumptions usually believed to be mutually exclusive, if not empirically, at least logically. One such attempt is the creation of the so-called socioterminology by François Gaudin [56], to deal with the sociological aspects of terminologies. In a pluralist approach, terminologies address concepts as they are disseminated in human societies and perceived by speakers to conform to the relative dependence of conceptual systems on contexts within which concepts are developed, interpreted and named. The explicit view of this approach is to account for ambiguity, homonymy, synonymy, extensional vagueness, opacity and contradiction, otherwise eliminated from conventional terminology. Ironically, scientific organizations, standardization institutes or terminological banks as autonomous transnational institutions pursue these goals in the full awareness of the underlying cultural values, namely that "technology and its dissemination is a product of culture, because its development depends less on technical capabilities than on its social and cultural desirability and acceptability" [57].

These claims legitimize the analogy between the aims and structures of these organizations and the language network intracultural model proposed by Milroy [58]. The rather radical view expressed by the Milroy's [59] about similar processes in an intracultural context can easily be referred to an intercultural level: only in written language standardization can true standard be achieved, and the "ideology" is all that gets transferred from the written to the spoken channel. To this we could add that, as commented by J.E. Joseph, what is transferred to the standard language is something much more significant: an entire way of thinking about language, as a medium composed of discrete units, able to be isolated in time, that is a meta-awareness of language; the means for those who have this power to consciously determine language functions to spread their views within the linguistic community; a form of graphicentrism which strengthen language's political force (what is material can be possessed), etc. [60]. In other words standard languages, which are acquired primarily through educational assimilation, acculturation and other prescriptive actions, reflect a cultural intervention against the way in which one's native language is normally acquired. The very no-

tion of a standard language thus implies much more than a mere semantic convention, since it appears to be the product of a unified culture which, in addition to prescriptivism and culturocentrism, implies value judgments associated with the role of standardized concepts considered as the "true" representation of objective entities.

Reductionist epistemologies should not be rejected, but they obviously do not explain wider aspects of language development which always remain dependent on interpersonal relations and social context. Syntactic parameter may be inborn, but they will never explain or minimally make understand that language learning, formation and use is dynamic, self-organizing, and epigenetic. Universal grammar or, deeper cognitive mechanism which make the linguistic device hypothesis useless, may constrain the collective evolution and individual learning of language, but they will never explain discourse, dialogic, rhetoric games or literary creativity. Conversely, the anthropological framework suggested by Geertz and many other anthropologists describe conventional understandings of humanity rested on reified images of man as a model, of gods as archetypes, of Platonic ideas or of Aristotelian forms, all of them dead identities disconnected from the intimacies of a lively environment and substantive human universals [61]. Instead of a modular or "stratigraphic" view of culture as a layer superimposed over biological, psychological, and sociological phenomena, he points out the interdependencies and coevolution of biology and meaning as interacting within experience. The anthropological picture thus firmly situates culture and biology as a unitary phenomenon, as otherwise suggested by human evolution: the neocortex grew up in great part in interaction with culture, a feature called "co-evolution" in an intermediate thesis between the nativist and culturalist theories. Referring to the explosion of symbolic artifacts in homo sapiens after a very slow acquisition of communication skills, this view proposes an integrational, "cognitive" theory compatible with pragmatics against the innatist, modular paradigm of language research. Drawing on neurobiology, evolutionary theory, linguistics, and semiotics, Terence Deacon and other teams of anthropologists suggest that language (inseparable from social life) and the brain (whose development in man is inseparable is equally inseparable from social communication) evolved in continuous interaction, generating a loop between the environment and genes, biological competences and the evolution of human culture [62].

9 Conclusion

The arguments above support the idea of an extensive, cross-disciplinary apprehension of most, if not all phenomena observed and studied in the many subjects of human and social sciences. In contrast with the "physics envy" mentioned at the start of this paper, they evoke openness to a "polis envy". The former could actually be addressed to many, if not all disciplines in social and human sciences, which one time or another have been committed to an ideal-type, or "common principals" imported from natural sciences. Taken as prescriptive criteria, these are somewhat analogous to a compass to establish the boundaries of the set of fields or subjects that can be considered as scientific, and consequently as a reliable source of knowledge. As to the "polis envy", it can readily be associated to the coexistence of plural subjects, whether citizens in this case or subjects or agents in other contexts, with no immediate or permanent definition of what could be taken as common, general or even universal. In this sense, the dream of scientific realism that underlies Western ideals of "progress"and "development", whose damaging sociological and ecological consequences are now widely recognized, together with the logical rationality shared by philosophy and science from Plato to Descartes and Popper, would give way to "humanist" and "reasonable" views, as expressed by Paul Feyerabend: "The appeal to reason is empty, and must be replaced by a notion of science that subordinates it to the needs of citizens and communities," [63]

Arguably, Feyerabend's remark radicalizes the view that of the quest for scientific truth is not only truth, but the motivation implied by its quest. Does this exclude reason? Not necessarily, if we remember Akbar the Great's point that "even to dispute reason one has to give a reason for that disputation" [64]. The object is then invariably underlain by the subject's choice, which requires a relational epistemology. Motivations and drives have been theorized by political scientists and philosophers, referring to such notions as honor, fear, spirit, courage or other emotions [65], showing that underlying social "facts" are interpretations of concepts used to name them. As Lebow says, in the physical world objects exist

independently of our behavior or knowledge of them: "Molecules were features of the world before they were ever imaged by humans and the earth continued to revolve around the sun despite the insistence of the Catholic Church for many centuries that the reverse was true. This cannot be said for the balance of power, the state or even society," [66].

As can be seen, the two polarities of thought mentioned in the introduction, which can be called *logos* and *tao* and coexisted in Archaic Greece and in China in the same period of history, can no longer be clearly identified with Western culture on the one side and Chinese culture on the other side, as both modes of thinking existed on both sides and have intermingled in history. What is visible today is rather that the prominence of logos in Western thinking and science is being increasingly questioned by plural rationalities as the systems studied in social sciences are becoming more and more complex. The consecutive demise of the sole predominance of formal explanations aiming at "truth" has been compounded by the new uncertainty about progress conventionally associated with rational thinking and governance, as scientific knowledge, or at least its applications, is increasingly accused of undermining the sustainability of the ecosystem, to the point of exposing the senseless vainglory of a "Strong Anthropic Principle" belief that "the Universe must have those properties which allow life to develop within it at some stage in its history," [67].

True, genetics has made great strides in terms of increasing the potential value of the core assets we wish to rely upon, but human communication remains obscure as long as it is reduced to the syntactic treatment of its written constituents or the basic mechanisms of sentences isolated from the complex input of discourse, rhetoric and semiotics in producing and understanding human interaction in all its varieties. Formally, we are sent back to a logic of "both" and the plausibility of contradiction, the pre-platonic rhetoric of "double speech" of speakers/hearers playing with dissonance, far later expressed by Diderot when he sensed the exhaustion of Cartesian modernity, showing how human practice was generating a society made of individuals with multiple loyalties instead of sovereign, isolated subjects. "... we have not many mouths", he said, "But in the mind there is not the successive development we observe in speech; if it had twenty mouths, and each mouth able to say a word, all the above ideas would be expressed at once," [68]. This idea has been theorized in many disciplines familiar with cultural diversity, the rhetoric of discourse and plural voices. "Polyphony" was theorized in the 1920s by literary analyst Michael Bakhtin from Dostoevsky's 'dialogical principle' to counter monologism, for which truth as a referential object is constructed abstractly from the dominant perspective and denies the subject any autonomous meaning in a closed discourse, in favor of dialogism, which recognizes the multiplicity of perspectives and voices in evolving interaction, each of which engaging with and informed by other voices. It draws on the history of past use and meanings associated with each word, phrase or genre, as well as on the anticipation of future statements [69].

On their side, social sciences can be expected to adhere to the same standards of evidence and theory-building as the natural sciences in so far as they remember that they are far more falsifiable than their supposed model, that rules are not laws, that reason is the ability to set up stable theories but also to make decisions, making reasonableness a more adequate concept than one-dimensional rationality. Concepts may migrate from one subject to another, but in so doing they are rebuilt with different components and contradict the fixed meanings they had at the start, a sufficient demonstration that disciplines are doomed to interact, losing some of their sovereignty in the same way as subjects and collectivities cannot stick indefinitely to their identities.

If dialogism is typical of everyday language use and literary writing, it is also deployed in social and political contexts where players are skeptical to identities, in an emerging transnational system of plural actors and complex factors interacting in an ordering which did not exist to that extent before the turn of the twentieth century. Not only do the few examples before suggest that there is no way out of the transdisciplinary approach, but they also imply that "transhistorical" elements derived from comparative history are inescapable, examining arguments in favor of the multi-perspectivism that thrived not only in Greece before the reduction of Sophia to episteme, of wisdom to science and one-dimensional reason, but also in non-Western cultural areas. Expressing and communicating knowledge in science can avoid a number of inconsistencies and misinterpretations providing they adopt a theory of transformative dualities, where symbols and theories

are not static, ontological objects, but restore their pragmatic dimension in fluid circumstances.

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About the Author

Dr. Paul Ghils is a professor emeritus of the Haute Ecole de Bruxelles. He taught language sciences and international relations in Algeria, Mexico, Iran and Belgium. From 1985 to 2005, he edited *Transnational Associations*, the journal of the Union of International Associations (UIA, which also publishes the *Yearbook of International Relations*). He is currently the Editor in Chief of *Cosmopolis, a Journal of Cosmopolitics* he created in 2007 in cooperation with the Canadian *Encyclopédie de l'Agora* and a Belgian e-encyclopedia. He has written many essays at the interface between philosophy, language sciences and international relations. His latest book is *Le langages est-il logique ? de la raison universelle aux diversités culturelles* (L'Harmattan/Academia, Paris-Louvain-la-Neuve, 2012), an innovative thinking on the interactions between cultures and languages in time and space and potential universal values.