On a Little Phrase of Riemann's...[1]

Gilles Châtelet

> In this last question, which we may still regard as belonging to the doctrine of space, is found the application of the remark made above; that in a discrete manifold, the ground of its metric relations is given in the notion of it, while in a continuous manifold, this ground must come from outside. Either therefore the reality which underlies space must form a discrete manifold, or we must seek the ground of its metric relations outside it, in binding forces which act upon it.
>
> B. Riemann, 'On the Hypotheses which Lie at the Foundation of Geometry'.[2]

Time is born along with the Heavens, Plato assures us in the *Timaeus*, and was created on the model of eternal nature. It is the image of that eternal progression whose rhythm is number. The perfect year, the conjunction of the revolutions of the eight planets, has elapsed precisely once the Same has completed its revolution. Closed up in the gilded cage of Eternity, Time is certainly not responsible for the flux of becoming. So what is it that permits change? It is Space, the condition of dispersion, and thus also the condition of the meaningless scandals and provocations of the Other.

For Aristotle, time is the number of movement, whose phases it punctuates. Time is cyclical and uniform. In Plotinus we find the outline of an idea of temporality. It is that of a creature detained upon an *arc* of the circle closed by the One. The Soul does not describe, uniformly, a trajectory proposed to it. Torn between Hope and Nostalgia, it aspires to merge with the privileged point of the One which plays the role of a keystone, and whose transcendence assures, *for it alone*, circularity.

The Same, Number, The One, subject time to the problems of eternity, of measure, of the end and of the origin, and do not permit the emergence of an autonomous temporality. To exclude all mundane problematics, Kant defines space and time as *forms* of sensible intuition. Space is the intuition of outer sense, time that of inner sense. Spatiality and temporality are thus distinguished by the rigid dissociation between interiority and exteriority. The duality *in itself/outside itself*, here a persistent split – in other words, the given of a *permanent orientation* (a particular case of synthesis) – allows the upholding of the duality *immanent objects/transcendent objects*, but also affirms the stubbornness of an understanding resolved to preserve the dissymmetry between these two classes of objects.[3]

Kant seeks the formal conditions of the representable: 'One can never forge a representation of the absence of space, though one can quite well think that no things are to be met within it.'[4] The first part of this proposition goes without saying, since space is one of the conditions of the representable. The second part affirms the exteriority of objects *to* the space *in which* they are immersed. Space is that which founds juxtaposition: 'we represent to ourselves objects as outside us, and all without exception in space.'[5] The unlimited character of space is a result of its foundational character (a part of space is not space, since a limited space is always limited by another space…). But it is the synthesis of apperception that allows us to give ourselves objects *all together*, juxtaposed but *given all at once*. The same goes for the time that founds the successive nature of phenomena: 'Appearances, one and all, may go away; but time itself […] cannot be annulled'.[6] Time is the formal framework of Becoming (whose progression is *observed* by experience). We have seen that apperception assures space of a kind of connectivity. The statement 'each part of time is not time as such' guarantees the unlimited character of time, but it is apperception that allows us to affirm that 'the *I think* accompanies all of my representations'. Undergirding the transcendental edifice, it guarantees that this family of representations, given successively and thus *parameterized* by time, are *my* representations. They are not external to each other, and do not constitute a discrete sequence of

1. [First published in *Analytiques (Psychanalyse-Écritures-Politiques)*, 3 May 1979, 67-75. Republished in the collection *L'Enchantement du virtuel: Mathématique, physique, philosophie* (Paris: Éditions rue d'Ulm, 2010)].

2. [1854; tr. W. K. Clifford, *Nature* 8 (1873): 14–17, 36–7. http://www.emis.de/classics/Riemann/.]

3. This may well be an infallible critique of 'metaphysics' in a philosophy.

4. [*Critique of Pure Reason* A24/B38-9].

5. [Ibid, A26/B42].

6. [Ibid, A31/B47].

figures evanescing at the very instant of their appearance. The cogito simply allows the exhibiting of a denumerable sequence of representations in time: I perceive this object *and then* I represent myself in the act of perceiving this object, etc., and so on to infinity! To found this successive nature, the representation of Time has to be that of an ordered multiplicity; but it is *the express intervention of apperception* that implies *connectivity*. The continuity of space and time is not clearly established, and the question of dimension is supposed to be settled by experience. The pure forms of intuition *parameterize the world*, but temporality and spatiality are the most impoverished parameters: minimal conditions of the Aesthetic for the activity of synthesis. Above all, they are those of an observer of Newton's mathematical physics, linked to a reference frame (chosen from a privileged class: inertial reference frames) and endowed with its own clock and universal rule. The conditions that determine the class of inertial reference frames imply the homogeneity of time and space. The choice of one of these reference frames allows one to decide on the simultaneity of two events completely external to this choice.

The reign of Analysis and of the determination by 'initial conditions' allows the abstraction of simultaneity to be pushed to the absurd. The key to the future of the universe seems to be given to he who 'knows all at the time $t = t_0$'. An old phantasm of absolute prophecy, which forgets about the *infinite work required* to obtain the initial affirmations, and which 'abstracts' from the resistance and the effectivity of time and space.

Metaphysics remains vigilant, however, and will dismiss this ambitious candidate for the mastery of the world. Hegel refuses the triumph of calculus, and spots the advantage he can draw from the unprecedented tension *interior/exterior* which haunts every metaphysics. He will make of it the prime mover of dialectical ontology. In the *Encyclopedia of Philosophical Sciences*, Hegel remarks that nature is not the primary and immediate abstract state, but that of exteriority and alterity. Time and space are an abstract state of separation, and are defined without reference to a consciousness.[7] The *properties* of space and time are *deduced*. Space and time are not discrete, but continuous in the sense that Hegel understands it in the theory of Magnitudes. Space is thus undifferentiated.[8]

In a startling paragraph, Hegel then tries to prove the three-dimensional character of space,[9] and broaches the problem of the movement of matter. Here space is no longer thought as an empty receptacle that is *then* 'filled' with a matter that remains external to it. There follows a fierce critique of the notion of force, denounced as the product of a lazy understanding, timorous before the search for ulterior determinations! For how can it be *implanted* in diffuse, inconsistent matter? Gravitation and mass appear, on the contrary, as dialectically linked to matter. For weight constitutes the substantiality of matter, which *claims* it to be informed by an *ideal* center that is *necessarily* external to it. *Weight* is the *specific* attraction submitted to by matter.[10]

At the triumphant height of Analysis and of Newton's theories, the philosopher dares to affirm the autonomy of his rigor.[11] He naturally detects the weak link of Newtonian mechanics, the artificial character of inertial forces. He thereby exhibits the conceptual insufficiencies that had been masked by the effectiveness and exactitude of the calculations of celestial mechanics.

Hegel's remarks have no effect, and his proofs (however speculatively coherent) have no chance of convincing a physicist or a mathematician. His obvious scorn for the manipulation of numerical quantities, privileged instruments of analysis, and the harsh polemical tone of the critiques addressed to Newton, tarnish the prophetical pertinence of his meditations on the physics and mathematics of his time. Quite apart from this, Hegel lacks an essential instrument: that of the *field*, which is precisely the exact intermediary between undifferentiated and continuous space and the discrete point that retains within it the tensions of the One. Spatiability is thus neglected, and temporality is appreciated only from the point of view of the work of the Concept. Geometry again remains the science of Space (which is not truly contested by dialectic), a science that studies the *figures*, that is to say, the representations *in* space, of beings defined by a rule of construction.

It was mathematicians, not speculation, that made the first serious assault on the Space of Euclid-Galileo-Descartes-Kant-Newton. Lobachevski shows that it is possible to construct a consistent geometry – that is to say,

7. Consciousness is indeed defined much later in the *Encyclopedia*.

8. The tension of the couplet *interior/exterior* is no longer that of the couplet *objective/subjective* – we no longer suppose as given what we called an global 'orientation' (the descendent of the I); ontology is deployed by the play of a *local* tension or more exactly an tension *internal* to the couplet. Of course, space will appear later for consciousness as abstract objectivity, and time as abstract subjectivity. It is only at this moment that time harbors the guarantee of the pact of the identity of the Self (which, in Kant, would permit the deduction of the connectivity of the representation of time). Time is an intuition of becoming. Genesis and annihilation no longer take place in time. Time is the very flux of birth and destruction…

9. He constructs a sequence: point → line → surface → space, and the reciprocal: space → surface → line → point, which evokes certain aspects of modern algebraic topology in which it senses, masterfully, the notion of duality.

10. The attraction of the Logic of Being negates the juxtaposition and will define continuity. *Heavy* matter posits *outside of it* a centre that denies juxtaposition *and* continuity. Weight translates the lazy dependence of matter which seeks in this external centre the principle of its differentiation.

11. See in particular the virtuoso paragraph where he claims to *prove* Kepler's three laws with the sole recourse to dialectical method!

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one conceived as the production of beings, following an explicit but noncontradictory protocol – in supposing the existence of two parallel straight lines issuing from the same point. The injection of these beings into Space, conditioned by Euclid's postulate, becomes a secondary matter. Mathematicians study 'geometries', choosing from a panoply of axiomatics.

It is Gauss's 'Disquisitions', and in particular the *Theorem Egregium*, that exhibit the specificity of the spatial: *distance*. Gauss gives himself a 'parametric representation' of a spatial surface. By virtue of certain constructions he defines the notion of *curvature*.[12] The 'Theorem Egregium' is stated as follows:

> Take p and p', two parametric representations of the surface Σ. Then, the measurements of the curve obtained with p and p' are identical if these representations give the same distance over Σ.
>
> The result is that there must exist an *intrinsic* definition of curvature – that is, a definition allowing it to be calculated directly on the basis of distance, these calculations being prescribed by the operations defined *on* the surface.

Since only operations and objects defined *on* the surface count, distance appears as the privileged concept of *spatiality on* the surface. Gauss discovers a mathematical *World* completely indifferent to 'our' space. The independence of this world is no longer granted by the possibility of a new axiomatic (Lobachevski's hyperbolic geometry), but bound directly to its description in terms of *proximity*. This proximity is not founded upon a unique reference framework, and a new physics seems possible, since the perception of living beings upon Σ must be different. Later, Poincaré wonders about the observations of animalcule physicists living upon a two-dimensional multiplicity. The latter, along with their reference frame, are displaced continually and enjoy a curvature that founds their spatiality as infinitely flat beings.[13]

As far as mathematics is concerned, distance is easily manipulable and axiomatisable. It naturally gives rise to topology, which is the spatiality of mathematics. It would be entirely erroneous to see Newtonian space as the 'particular case' where ds^2 takes the classical form that we know. Newton's space and Gauss's distance belong to completely different problematics. The existence of a non-privileged reference frame may very well be applied to physics – and 'by chance' we find that Lagrange's equations can be inscribed very well on a surface. A particle not subject to external forces follows the lines of the shortest distance, geodesics; which gives geodesics an immediate physical interpretation (they are, moreover, also linked to singularities of kinetic energy). Distance here is given, by way of physics, as resistance, difficulty, work to be accomplished. It is given as *to be traversed*, which renders the notion of simultaneity problematic. For the simultaneity of two events is given 'at once' for an observer concerned with them. It abstracts out 'something' which is propagated from one to the other, and which is necessarily lost once one tries to synchronise some of, or the totality of, points of the surface.

Gaussian distance introduced a type of thought we might qualify as *tangential*: monads (physicists, mathematicians, philosophers…) live upon a surface. Each possesses a reference frame (condition of the effectuation of representation), and all that counts for each of them is *proximity* (inverse proximity of distance), which, moreover, determines the communication with the others by way of the geodesics that it can spread out around it. But one presupposes neither a global orientation given by a transcendental subject, nor a global, homogeneous framework, which brings about a type of lived experience reduced to nothingness by *congruence*. An *immersed* World still claims a *terrain* and inevitably calls for the 'in'. If I live on a surface, the world no longer *faces* me; and alterity is no longer lived as a *confrontation*. Differentiation propagates itself step by step in this community of monads which entertain *tactile relations* described by a certain type of tension that we might call *connection*, and to which we shall return.

Riemann presented his celebrated dissertation in 1854, and manifestly understood the full importance of the Theorem Egregium. The dissertation includes a polemical part, an explicit warning against Space and the Celestial

12. Recall that a surface Σ of space is said to be represented parametrically in space ('immersion of Σ in usual space') when we have a family of the type:

$x = f(u,v)$

$y = g(u,v)$

$z = h(u,v)$

The distance $dx^2 + dy^2 + dz^2$ between two infinitely near elements of the space thus induces upon Σ a distance $ds^2 = A(u,v)\,du^2 + B(u,v)\,dv^2$, where $A(u,v)$ and $B(u,v)$ are calculated from the differentials df, dg, dh. This is Gauss's ds^2. Gauss then defines the curvature as follows: consider a point x of Σ and an element dS of the surface around x. Take Ny, the normal at point y of dS.

Transport this normal parallel to itself in the origin (the so-called Gauss application) and observe the little disc swept by the extremity of the normal as it describes dS. This little disc is seen under a solid angle dΩ and the measurement of the curvature is the limit (if it exists) given by:

$$\lim \frac{d\Omega}{dS} = Rx$$

The above definition heavily depends on the existence of the immersion of Σ in space (transport in O of the normal parallel to itself); with the Theorem Egregium it can be shown that Rx depends only on the functions A and B of ds^2.

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Mechanics then triumphant. The notion of an *n*-dimensional multiplicity is then elaborated in full. The privileges of three-dimensional space have had their day.... A multiplicity is the given of an object describable locally by *n* real numbers ('coordinates'), which are interpreted naturally as the measurements associated with the representations of an observer. As the Theorem Egregium suggests to him, Riemann shows clearly that a geometrical world is given by proximity alone, and this without recourse to any immersion in a Euclidean space. Recall that curvature can be understood as involving the relation between the measure of a given element by the real proximity (the $1/dS$ of note 14) and the measure of that element given by the proximity induced by the representation $1/d\Omega$. In the case of the Theorem Egregium, this can be calculated by way of the *parallel transport* of a normal related to an origin in 'space'. This operation of 'transport' is not defined a priori for any multiplicity whatsoever. To bring about the comparison of works effectuated in neighboring laboratories, a new concept is seen to be necessary, if one refuses the detour via an immersion. The modern concept of *connection* (due to Lévi-Civita) allows the definition of the parallel transport for any multiplicity whatsoever.[14] Formula (I) in the note shows very well how connection describes the distance between the representation of the field Y obtained by ego x' in its reference, and the representation that this ego can obtain upon the representation of Y by ego x'' when this latter is retransported in parallel into x'.

Likewise, the generalised curvature $R(X_1, X_2)$ enjoyed by a small parallelogram surrounding x and constructed with the trajectories of the fields X_1, X_2[15] is the distance between the representation of a field Z to point x and the representation of the field obtained by parallel transfer when the latter describes the edge of the parallelogram.

Thus, when the curvature of a multiplicity is always positive, the error committed by the egos always persists in the same direction, and their world is necessarily rather limited![16]

After the introduction of curvature, Riemann speaks (a little timidly) of physics. He discusses the nature of space in the infinitely small, noting well the necessarily unlimited character of Space (since it is one of the foundations of representation), *this not implying infinity* (as we have seen for curvatures that are everywhere positive).

Riemann's paper concludes with the quotation we have placed at the head of this article. Let us remark that it employs no mathematical- or experimental-type argument. How to found the metric of physical space? If this space were discrete, a natural class of metric would impose itself immediately, since the discrete tolerates only a limited proximity for each of the elements. But space is given as *continuous* multiplicity in mathematical physics, if one admits the possibility of communication between monads, a communication realised by the transmission of signals that follow the most proximate path. Around me, the radiance of geodesics assures the liaison with the neighboring egos, and founds the 'reality' of representations obtained from within *my reference frame*. '*Where*' does it come from, then, this proximity that founds all communication (and coexistence)? When space is Euclidean, distance is that which remains invariant under the Galilean group that exchanges the inertial reference frames. Although one may affect a different reference frame for each concrete ego, a unique model (clock and universal rule) can represent the class of

13. A rather hasty dismissal on Poincaré's part! In fact, the life of these animalcules is probably more exciting than that of the Newtonian observer who knows only planarity!

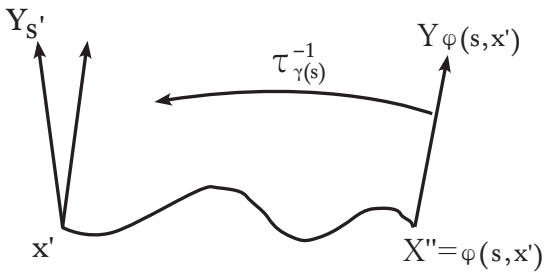
14. With each point x of a manifold V is thus associated a reference frame.

Tx V. V is said to be endowed with a connection if one knows how to associate with each vector field x an application dx and operating on the vector fields. Thus, if Y is a vector field, Yx its 'value' in x, then dx (Y)x is a vector of Tx V. If a Riemannian distance is given, there is a unique connection (under certain conditions [missing text in original] ...Riemannian distance is distance.

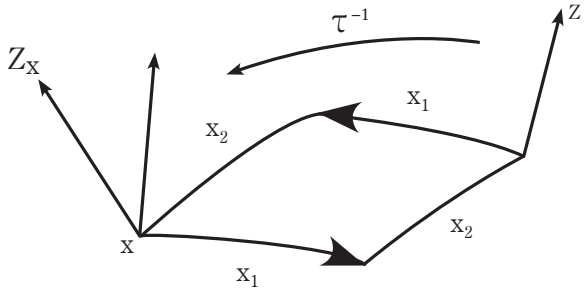
If V is endowed with a connection d, one can then show that if two points X' and X'' are joined by an arc of a curve, there exists an application t_g that sends isomorphically the reference frame Tx' V to Tx'' V. This is the *parallel transport* along g, which can therefore be interpreted by the formula:

$$\nabla_X(Y)_{X'} = \lim_{s \to 0} \frac{1}{s}\left(\tau^{-1}_{\gamma(s)}\, Y\varphi(s,X') - Y_{X'}\right)$$

where φ is the integral curve



15.



16. It can be shown mathematically that a complete manifold of curvature everywhere $> a^2$ is necessarily limited.

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privileged reference frames.[17] A type of contract between the transcendental Ego and the experience of mathematics-physics allows the founding of 'pure' geometry in this model. If space is 'curved' (as Riemann suggests…), no reference is privileged *a priori*, no ambient Space plays host to concrete egos. The foundation of 'pure geometry' in this space becomes problematic.

In any case, in the years that follow, group theory and physics advance very quickly. Two monsters cause a scandal in geometry: the Möbius band (Möbius was at the time a sexagenarian, who decided to compete for a prize awarded by the Academy of Paris in 1868), and the Klein bottle. These two curiosities furiously shook up the classical notions of immersion and orientation. The Erlangen program also proposed a kind of 'Copernican revolution' in geometry. There was interest in group operations that leave invariant a geometrical 'being' supposedly worthy of interest in itself. Henceforth an irreverent approach reduces this 'being' to the status of an invariant…. The concept of the group triumphs, and the possibility of distinguishing various subgroups of the same group founds, alone, the difference between projective, affine and metric geometries. The corresponding modern point of view is that of homogeneous space, where the geometrical being of that space is described simply through the operations of a subgroup on a group.

In physics, Maxwell writes his famous equations and… the latter are not invariants under the Maxwell group. The situation becomes critical when Michelson shows experimentally that the speed of light does not follow the law of the 'composition of speeds'. And we know the rest… Poincaré studies the Lorentz group and misses relativity (all the while asking himself about the perception of infinitely flat animalcules upon a sphere…).

And then comes Einstein…Special Relativity, General Relativity, discussed a million times already. Let us just recall that Special Relativity critiques the notion of simultaneity on the basis of the analysis of the concrete process of synchronisation by signals at infinite speed, and that General Relativity (contemporary with work on differential geometry) responds to Riemann's questioning. The distribution of masses founds the geometry of space by determining the metric via Einstein's equation which links together curvature and the tensor of energy-impulsion (which expresses the distribution of 'matter' and energy). This equation is to be understood in the most strict logical sense: equation: a couple of statements separated by an equals sign. A proposition, an operation of 'geometry' is 'in fact' a proposition, an operation, on 'matter' (*the latter seeming, moreover, a concept far too indifferentiated to justify such a privilege!*).[18]

If we keep in mind the observations made above, concerning the work of Gauss and Riemann, it is no surprise that the language of 'mobile reference frames' and of connections (see the work of Elie Cartan and others) proves perfectly suited to general relativity.[19] The commodious and elegant nature of the calculations is explained once one understands the world seen by relativity as that of a community of physicist monads who exchange their representations via parallel transport permitted by *connection*,[20] associated with the proximity induced by the presence of 'matter'. The 'real' time of these monads (measured, felt, or lived time…) is no longer the abstract coordinate that was represented by the form of inner sense in Kant. The latter had identified the formal conditions of the 'representable' and hence the 'referenceable'. The mathematical work of Gauss and Riemann, and Einstein's physico-mathematical coup de force, bring back temporality, distinguishing between a parametric time t, a simple fourth 'dimension'[21] necessary for the activity of representation in each reference and conventionally chosen, and a proper time directly bound to proximity and thus describing the existence (and coexistence!) of worlds.

Husserl's phenomenology, contemporary with Relativity, poses a question that could be formulated as follows: 'Under what conditions is a World possible?' (thus generalising Kant's question).[22] Thus did the triumph of Relativity render more promising the exploration of 'the a priori'.[23]

It is remarkable that the question of space haunts phenomenology at the crucial point that its deployment

17. In modern language, the bundle of references of affine space is 'trivial'. A standard laboratory describes, it alone, the bundle of possible references.

18. Cf. the difficulties of unitary theories.

19. Modern presentations of general relativity by physicist-mathematicians tend more and more to utilize the language of 'bundles'.

20. The connection is unique under certain conditions.

21. Two events (x_0, x_1, x_2, x_3), (x'_0, x'_1, x'_2, x'_3) are distant by

$$-(x_0 - x'_0)^2 + \sum_{1 \le i \le 3} (x_i - x'_i)^2$$

The – sign affecting the coordinate x_0 (time) marks *successivity* in each reference frame. The monad must be able to distinguish between what it is and what it projects. If the metric counts two – signs, a transformation that is linear and issues from physical operations exchanging the spatial cone and the temporal cone and the 'successive' will be unknown.

Hermann Weyl (*Philosophy of Mathematics and Natural Science*) remarks that only odd-dimensioned spaces present the following peculiarity: the equations of wave propagation imply that the extinction of a movement is followed by the complete obscurity within a radius that grows as fast as light.

22. [See Châtelet's text "Autour du vrai-faux rapport d'Éric Alliez. 'De l'impossibilité de la phénoménologie", at http://multitudes.samizdat.net/Autour-du-vrai-faux-rapport-d-Eric.]

23. Without, however, any axiomatic temptation.

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permits: the *epoché*. I remain indifferent to the *thesis* of the world. The World is no longer *confronting* me. The frustrating question: 'but *where* then is found the transcendental spectator whose radical conversion permits the bracketing-out of the form of statements of the world?', finds a satisfying solution only in the given of a new spatiality radically different to that of man still submitted to the natural attitude. The transcendental spectator is not so distant from the egos that live on a surface. They are not *in* their world, but *adhere* to it nevertheless. The task of the constitution of the Ego is henceforth possible: the reattachment of points of view, observations of 'phenomena of existence'.[24]

Thus two poles emerge: a 'wordly' pole: a multiplicity V, and a 'transcendental' pole: a 'total space' E whose existence is required for the *practice* of the epoché.[25] (An application I, intentionality, defined by E *on* V, assures the bond between the two). A type of connection in E separates 'horizontal' intentions (susceptible to being filled by an intuition) which have an effective image in V, from 'vertical' intentions (empty intentions) which have a null image in V. These latter detect *alterity* in Husserl.

To conclude, recall that *The Order of Things* proposes, as determinant figure of classical knowledge, an invisible central point, ordering the whole ballet of representation but necessarily situated outside the framework of the latter. It seems that another model operates implicitly, from the nineteenth century and beyond, in an important domain of Mathematics, Physics and Philosophy. The central point (linked to the fifteenth-century theory of perspective) breaks up into a multitude of referents adhering to the world. Indeed, Elie Cartan's term 'moving frame' [*repère mobile*] suggests a scattering. This model is formalised according to a triplet (groups, 'total space', multiplicity), today called a principle bundle, and describes the obtaining of a total space by way of group operations that reattach between them, step by step, local points of view.

The question of the sign is, for example, directly linked to that of local orientation, which itself is the choice that one can effectuate temporarily in a set of two elements. Saussure's diagram should be taken concretely: to decide a moment to separate from this leaf of paper the signifier and the signified. A global orientation is a completely other affair.[26] Hegel understood this well, and for him History is possible through the profound inadequation between signified and signifier seen as global determinations. Only disoriented consciousnesses make history... *Local* tension alone – *interior/exterior* – deploys all of ontology. Hegel found the simplest operation and group to avoid the global orientation of multiplicity.

Husserl does indeed extract the general necessity of a 'total space' different from the multiplicity, and of a group of operators far more complex than Hegel's group (1,-1). The reduction of total space to the form of an Ego appears rather surprising, the mathematical concept of connection furnishing indeed the idea of a local but rigorous support for the continuum of the World.

In any case, psychoanalysis's current infatuation with the Möbius band demonstrates the pertinence of the blow sustained by the Subject by an inoffensive dissertation proposed to a jury of mathematicians.

And then, very recently, in physics, in the theory of elementary particles, the introduction of connected bundles removes part of the mystery of gauge invariance. This is probably no chance occurrence.

24. The expression is Husserl's own.

25. E must be different from V. Husserl elaborates that it is above all not a 'beyond' whose transcendence would mask badly the similitude of spatiality with the beings *immersed in* V.

26. Local convention. A signifier can abruptly slide and take itself for a signified (cf. the theory of connotation).

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