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Differentiality : from Saussure to morphodynamic

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1) Prologue

Merleau-Ponty wrote that "differentiality", as a regime for generating identities from their differences, is a "difficult idea", even paradoxical (cf. below). We owe it to J. Petitot to have clarified this idea, formally, epistemologically and phenomenologically, thus establishing it as a genuine scientific concept.

Upstream of Petitot's contribution, and as if to illustrate the profound difficulties posed by the notion of "negative identity", I would like to briefly recount Saussure's laborious attempts to ground his intuition of "differential identities" in law and in reason, and to show how he approaches morphodynamic perspectives by his own means.

2) Introduction & generalities

In Saussure's writings, we find some passages tinged with the positivist naiveté of another age, when one could still believe that observation, being a spontaneous practice, not reflected upon, was sufficient to found the sciences. For example:

"In most scientific domains, the question of units never even arises: the units are given in advance. In zoology, the animal immediately presents itself. Astronomy similarly works with units that are separated in space: the stars. In chemistry, one can study the nature and composition of potassium dichromate without doubting for an instant that this is a well-defined object." (CLG/B, p. 106-107)

Such considerations of course cannot be seriously defended. Let's simply recall, in a general manner, that modern epistemology unanimously rejects the hypothesis of things "given in advance." In other words, it disqualifies the possibility of an experiment that seizes facts as they are, and, dually, the possibility of conducting observations preserved from any theoretical infiltration.

But if Saussure recognizes a certain positivity in the natural sciences, his true reason for doing so is to oppose semiolinguistics to this positivity, insofar as semiolinguistics has to face difficulties that the natural sciences would not encounter.

"Does linguistics encounter, as its primary and immediate object, a *given* object, a set of things that are available to the senses, as is the case for physics, chemistry, botany, astronomy, etc.? By no means [...] linguistics is placed at the extreme opposite of the sciences that can start from sense-data" (ELG, 19-20).

There's no need, then, to put Saussure on trial: his epistemological rigor and acuity are constant. The passages that could be denounced are in fact counterbalanced by a number of others, far more essential, which promote a *problematic of "viewpoints"*, and which recognize as fundamental the problem of the constitution of identities:

"All the work of the linguist who wants to take methodical account of the object he is studying comes down to the extremely difficult and delicate operation of *defining units*." Or again, "...we believe that in the last analysis we must always return to the question of knowing what it is in the essence of language that constitutes a linguistic identity" (ELG, 18).

In short, for Saussure, the point is that semio-linguistics does not have the same gnoseological foundations as the empirical sciences, and therefore cannot adopt their methods and principles without a critical reevaluation. Nevertheless, the epistemological basis for comparison that was retained by Saussure – the positivist representation of the natural sciences – is clearly unsatisfactory.

We can thus legitimately ask ourselves whether, with more sophisticated conceptual tools at his disposal, such as those provided by contemporary epistemology, Saussure could have perfected his work – by which I mean not so much achieving different or complementary results, but giving his fundamental concepts, which were gradually established in his writings and teaching, a more assured demonstrative consistency, a clearer problematic meaning, and a firmer epistemological foundation.

In this case, it's the concept of *differentiality* that we have in our sights. For as we shall show, differentiality is a difficult concept to introduce, both in its *order of necessity* – that is, insofar as it is appropriate to semiolinguistic analysis and, further still, constitutes a category of structural objectivity – and in its *order of facticity*, insofar as it configures empirical data and manifests itself therein. Let's recall what Merleau-Ponty says on this topic: « [...] language is made of differences without terms; or more exactly, [...] the terms of language are engendered only by the differences which appear among them. This is a difficult idea, because common sense tells us that if term A and term B do not have any meaning at all, it is hard to see how there could be a difference of meaning between them [...]» (Signs/Mc 39)

In my opinion, one of Saussure's key ideas lies in a passage from the *ELG* (below), where he asserts the impossibility of semiolinguistic analysis to proceed, like the empirical sciences, through a process of abstraction/generalization: « We shall see at once that it is not permitted with impunity to substitute [...] all of a sudden abstract entities for the fact of the identity of certain concrete facts [...] » (*ELG*, 34).

However, as we shall see, this impossibility, when it comes to elaborating nevertheless a semiolinguistic objectivity, i.e., when it is a question of recognizing and characterizing the format of intelligibility of a semiolinguistic phenomenon (this format no longer being that of the empirical concept), this impossibility leads to the principle of differential identities. In other words, the differential conception of semiolinguistic identity can be introduced, and even deduced, as a "weakened" form of empirical objectification: a form that compensates for the impossibility of implementing a process of conceptualization along the same lines as the empirical sciences.

But to do this, we first need an epistemological frame of reference on the basis of which we can subsequently recognize and characterize the Saussurean problematics of "viewpoints," as well as the process of abstraction/generalization mentioned above. This frame of reference, which constitutes the robust and "ambient" epistemological framework of contemporary empirical sciences, is that of an epistemology of refutation (Popper 2002).

3) Back to Saussure: in search of phenomena

Let's briefly recall that, according to Popper, the functional complexion of empirical knowledge is that of an interweaving of theoretical components, at a minimum two. One, called the "principal component", has a hypothetical value and is subject to empirical testing, while the other, called the "auxiliary component" (Granger 1992), is recognized for its superior credibility and serves as an observation post, i.e., a system of determination through which observed phenomena are confronted with the predictions of the "main" component.

And let us add that it is this articulation into various components that safeguards empirical knowledge from the circle of self-satisfiability (i.e., when theoretical concepts produce the data on the basis of which the theory is then evaluated).

The principal and auxiliary positions of the components articulated under the unit of scientific laws are, on a gnoseological level, fundamentally dissymmetrical. To be sure, each component constitutes a theoretical device liable to the same suspicions, but one (the auxiliary) stands out from the other by virtue of its superior credibility. The motives for and content of such credibility are multiple. It may be simply conventional (social consensus) or it may be functional (practical effectiveness).

But, in the final analysis, in this series of interlocking theoretical devices that comprise the unity of science -- a series that alternates the relative statuses of auxiliary and principal (the conceptual apparatus taken as principal in a certain discipline will be auxiliary in a related discipline) -- it is essential that observation posts should be as close as possible to forms of recognition that are intrinsically endowed with an indubitable value of truth and evidence, i.e., forms of intuition, as revealed by phenomenological approaches.

Without opening up a large and profound debate, at the heart of which is the question of the modality and possibility of a recording of formal qualifications, thus turned towards objective knowledge, against the background of a world whose phenomenology relates to a subjective and existential reality (spontaneous vision, vital values, praxis dimensions...) – without opening this debate, let's simply observe that the conception of maximal proximity, or even of connection, of an "ultimate" auxiliary theory to the order of a pure phenomenology is defended by Popper - as evidenced by the central place he accords to observation in space and in time, which is to say, according to the forms of external and internal intuition.

We can then understand, and translate into the terms of contemporary epistemology, what Saussure means when he notes, in reference to the natural sciences, that their objects are "given in advance" or "directly accessible", and subsequently delivered to different "viewpoints": "Other sciences work with objects that are given in advance and that can then be considered from different viewpoints; but not linguistics." (CLG/B 8)

This is simply to acknowledge that the phenomena of the empirical sciences are originally configured according to the forms of space and time, or that the natural sciences have a "primary" auxiliary theory, according to which phenomena are localized and qualified as spatio-temporal entities, and that these observational data are then delivered to different "viewpoints", i.e. to the different "principal theories" that are the various scientific approaches that deal with them (mechanics, chemistry, electromagnetics, thermodynamics...).).

So, when Saussure notes that linguistics, unlike the other sciences, has no directly accessible objects, he is expressing a truth that others would recognize after him, namely that the object of linguistics is not an object in space and time. Aurox (1998) (and Milner (1989), see below) fully subscribe to this.

Indeed, admitting that "sooner or later, the fundamental question must be asked: What is it that exists in matters of language?", Aurox (1998, p. 113) continues by noting that "[if] in the ordinary sense of existing, there only exists that which is located in time and space [then] in matters of language, the problem is to know whether this ordinary sense of existing is sufficient." Following this, and further still, Aurox recognizes, without providing an answer, that "the hypothesis of insufficiency is probably the most widespread among both philosophers and linguists."

Similarly, Milner (1989, 50) interrogating the sense to be given to the expression "to encounter" when it is a question of linguistic factualities, acknowledges that "we do not really know what *to encounter* means in such cases"—or, at least, that when it comes to linguistic data, the [expression] "to encounter" does not take exactly the same meaning as it does in "material" empirical sciences.

But if one must accept that semiolinguistic factualities do not appear in the same way as material things, Saussure undoubtedly goes too far when he denies them any phenomenal existence, that is, when he refuses to acknowledge that they have a well-regulated form of intuitive existence, as specific forms of appearance through which, therefore, they are constituted as the object of semiolinguistic perception. This can be seen in the following two citations: "Language [...] has the strange, striking characteristic of not offering entities that are perceptible at the outset [...]" (CLG/B 107) and "To be rid of illusions, we must first be convinced that the concrete entities of language do not present themselves to our observation." (CLG/B 110)

Let's recall that at the beginning of the 20th century, almost at the same time as the three courses given in Geneva, Husserl (1991) inaugurated his *Logical Investigations* with a phenomenological analysis of the sign, which culminated almost a decade later in the *Leçons* (1995), which set out, in a theory of the strata of verbal consciousness, a semiolinguistic phenomenology. Contrary to the obstructions foreseen by Saussure, Husserlian phenomenology precisely describes, according to a stratification of the attentional field of consciousness, how signs and words are constituted as immediate objects of verbal consciousness, in other words, how signs are in fact "entities perceptible at the outset" that "present themselves to our observation." As a subsidiary point, and as I have attempted to establish in various works (Piotrowski 1997, 2009, 2017), it should also be noted that the Saussurean theory of the sign is not without phenomenological significance, in the sense that the differential forms that configure the objectivity of signs are also those that regulate their manifestations, and thus configure the phenomenality of signs.

4) "Viewpoints" & empirical knowledge

With the Popperian problematic grid and terminology at our disposal, and retaining them as an epistemological frame of reference, it will be useful to return more precisely to the Saussurean theory of "viewpoints", in order to assess its relevance and shortcomings, after having placed it in the forms and terms of Popperian conceptualization.

From the start, then, and in keeping with the fundamentals of epistemology, Saussure recognizes that all data is impregnated with theory: a factuality never exists by itself, but necessarily proceeds from a certain conceptual synthesis, or in Saussurean terms, a certain "viewpoint".

"Let's recall in fact that the *object* in linguistics does not exist from the start, it is not determined in itself. Henceforth, to speak of an object, *to name* an object, is to invoke a determinate viewpoint *A*" (ELG, 23).

Saussure then approaches the question of the intersection of theoretical prisms that might be concerned with the same data – an intersection that, as we have seen, constitutes the principle and foundation of all empirical knowledge: "Having denominated a certain object, delivered to the viewpoint *A*, which has no absolute existence except in the order of *A*, and which would not even be a delimited thing outside this order *A*, it is perhaps permissible (in certain cases) to see how this object of order *A* presents itself, seen from viewpoint *B*" (ELG, 23).

This is where the Saussurean approach comes up short. Lacking a gnoseological architecture in which a plurality of theoretical perspectives are unified in a hierarchical articulation of relative positions – respectively "principal" and "auxiliary" – and in which theoretical perspectives thus produce their objects without combining their views, the Saussurean approach finds itself in the impasse of a gnoseological compartmentalization. Indeed, Saussure writes:

« At this moment, are we in viewpoint *A* or viewpoint *B* ? The regular answer would be that we are in viewpoint *B*, but this is because we have given in once again to the illusion of linguistic beings having an independent existence [...] the most benevolent of linguistic truths is to understand that at this moment, to the contrary, we have not ceased to remain fundamentally in viewpoint *A*, simply because we use a term of the order *A*, the very notion of which would escape us from the perspective of *B* » (ELG, 23-24).

According to Saussure, then, once an object has been elaborated according to a conceptual prism *A*, it cannot be taken up again under the light of prism *B*. This is because, implicitly, Saussure envisages "viewpoints" according to the fundamental schema of the classical episteme, that is, as modalities of synthesis (concepts) operating on an amorphous empirical diversity (matter) and producing specific and therefore mutually unconnected empirical objectivities. Thus *A*'s production never concerns *B*, and any object of *A* is bound to escape from *B*: « [...] one never ceases in linguistics to consider within order *B* objects *a* that exist according to *A* ; within order *A* objects *b* that exist according to *B* but not according to *A*, etc. » (ELG, 24).

By this token, then, and anticipating Milner's observations (cf. below) that linguistic analysis ultimately has recourse, as a simulacrum of an auxiliary component, to the prism of a

rudimentary linguistic analysis ("minimal grammar"), Saussure notes that « the linguist gives us as a concrete entity, and as an absolute entity that serves as the basis of his operations, the abstract and relative entity that he has just invented in a previous step » (ELG, 24). In Milner's terms, this translates into: "No doubt the manipulation of language examples has the properties of experimental manipulation [but] these examples [and their variational manipulation] all incorporate a *minimal grammar*. It is possible [...] to treat this minimal grammar as an instrument of *observation*, [...] but doing so would be a simplification [which needs to be rectified]: minimal grammar [...] is still a grammar [and thus] an embryo of linguistic theory" (Milner 1989 128)

From the above, and in all honesty, Saussure concludes that an epistemic circularity has reached an impasse, the general causes of which were mentioned above: « An immense vicious circle, which can only be broken by substituting once and for all in linguistics the discussion of viewpoints for that of « facts », since there is not the slightest trace of a *linguistic fact* [...] outside the prior adoption of a viewpoint » (ELG, 24-25). And it is this "vicious circle" that Milner highlights in turn: "[...] The consequence of this is that *the instance of observation* [minimal grammar] cannot be made fully *independent* from the linguistic theory itself" (*Ibid.*, p. 128) Thus, "*circularity* can never be fully eliminated: any example of language, insofar as it enables linguistic reasoning, already supposes linguistic reasoning" (*Ibid.*, p. 129).

And it is precisely to escape this "vicious circle" that we mobilize here the Popperian epistemic apparatus, which has the double advantage of localizing and characterizing the failings of the problematic of "viewpoints" and offering the space for a solution to the problems encountered by Saussure.

5) Abstraction/generalization

Translating Saussure in this manner into the terms of contemporary epistemology does not only bring his considerations up to date. For in the articulation between principal and auxiliary theoretical components lies, in addition to the condition of a refutative experimental test, the principle of conceptualization through abstraction and generalization.

But Saussure once again questions the modalities and empirical content of the generalization process. Saussure writes: « [...] there is something primordial and inherent in the nature of language such that, from whatever side we attempt to attack it – justifiably or not – we will never be able to discover *individuals*, that is, being (or quantities) determined in themselves, on which a generalization takes place *thereafter*. Rather, there is FIRST generalization, and there is nothing outside of it; and since generalization presupposes a viewpoint that serves as a criterion, the first and most irreducible entities with which the linguist can concern himself are already the product of a latent operation of the mind» (ELG, 23).

In this passage, Saussure once again expounds the thesis of the lack of an auxiliary component, through which data would be delivered to different viewpoints (principal components). This time, however, he develops his argument from the angle of a problematic of generalization: the viewpoints applied to individuals thus operate as regimes of generalization.

However, we know that the elaboration of empirical concepts through abstraction/generalization relies on the dimension of an auxiliary component, since it is within the associated framework of the main component that generalization takes place. A simple example, that of classical mechanics, will illustrate this.

In the case of mechanical science, the auxiliary theory – in this case, kinematics – constitutes the "viewpoint" from which singular material occurrences can be homogenized and approached, and furthermore, with respect to the operations thus observed, brought under a common form of determination (in this case, the concept of mass as a quantity of matter). In other words, the empirical concept, as a principle that subsumes and qualifies material diversity, is the ideal correlate of an experimental and descriptive practice that is supported by a gnoseological articulation of principal and auxiliary components. The concept thus constitutes the principle of intelligibility of observable operations from an "auxiliary" viewpoint.

From this problematical angle, the irreducibility of concrete occurrences, whatever their nature, is no longer in itself an obstacle to their conceptualization, provided that the vector of abstraction constituted by an auxiliary theory is available. This explains why Saussure, having noted the infinite variety of semantic realizations of the same word (CLG 175) or acoustic realizations of the same phoneme (cf. CLG 175 or ELG 32), was unable to overcome this state of affairs, in contrast to the empirical sciences that deal with equally singular and mutually irreducible factualities.

6) Review & transition

From whichever angle one examines the constitution of semiolinguistic knowledge, we are confronted with the same difficulty: the absence of an auxiliary component. We have seen that this component, which is essential to founding the consistency of the discipline, always seems to slip away, either because it does not respond to the same forms (spatio-temporal) as empirical experience, or because it always includes an element of semiolinguistic theorization (the problem of the epistemic circle), or again, as we are examining it here, because of the lack of an empirically-based process of generalization.

But if, by limiting the debate to the level of principles, it seems legitimate to conclude that semiolinguistics as empirical knowledge is inconsistent, this conclusion, which is radical, seems quite artificial in view of the effectiveness of descriptive practices, which are clearly capturing part of the truth of the phenomena they approach.

Thus, to revisit a formula of Saussure's (in Godel 1969, 60), we could say that in certain aspects, the consciousness of the speaker corroborates that of the grammarian. In other words, the conscious content of the linguistic fact constitutes the primordial background against which linguistic analyses are to be situated, not especially for confrontational purposes, but because this background provides a fabric of semiolinguistic reality insofar as it is immediately practiced. So, discussing the difficulties of segmenting the spoken chain, Saussure observes that "[...] speaking subjects are unaware of the practical difficulties of delimiting units. Anything that is of even the slightest significance appears to them as a concrete element, and they never fail to distinguish it in discourse. But it is one thing to feel the quick, delicate interplay of units and quite another to account for them through methodical analysis." (CLG/B 106)

Let us add to this that the implication of the field of consciousness and its specific data in the elaboration of scientific knowledge is in no way paradoxical: it is indeed on the forms of spatio-temporality, and therefore on the forms of a consciousness of specific phenomena, or in other words, the immediate knowledge of such phenomena, that mechanical science is built. More broadly, as Husserl insists, « the scientist believes that he overcomes the subjective-relative, but the subjective-relative is the ultimate basis for all objective confirmation » (PdS, p. 25).

Finally, let us note that *Saussure never ceases to recall that semiolinguistics deals with facts of consciousness*, in terms of matter as much as form. Thus, in the *Course*: "Synchrony has only one perspective, that of speaking subjects, and its whole method consists of gathering evidence from speakers; to know to what extent a thing is a [semiolinguistic] reality, it is necessary and sufficient to determine to what extent it exists in the minds of speakers." (CLG/B 90). And just as much in the *Écrits*: « the two elements of the word are reciprocally in the spiritual order [...] not only signification but also the sign is a pure fact of consciousness » (ELG, 19) ; or again, « [...] at each moment of its existence, there only EXISTS [sic] linguistically what is perceived by consciousness, that is, what is or becomes a sign » (ELG 45). One also finds this in the *Notes*: « in language, what is concrete is what is present to the consciousness of the speaking subject ». And this semiolinguistic awareness is "categorical" in the sense of Husserl (RL5) in that it aims at a relational order (of differences) beneath signified or signifying contents: "[...] one is always conscious of only the a/b difference" (CLG/B 118)

The preceding considerations thus suggest, quite directly, the following hypothesis: (i) since facts of language are, in whole or in part, facts of consciousness, and since a semiolinguistic

consciousness is capable of apprehending the "subtle" interplay of articulations and constituents, not through conceptualization but through immediate knowledge, and (ii) since, in the architecture of the empirical sciences, the practical dimension of observation is carried by a so-called auxiliary component, it is not therefore illegitimate, on a partial and hypothetical basis, to assign to semiolinguistic intuition the epistemic function of auxiliary theoretical component.

However, at this level of elaboration, the proposition is trivial and its limitations obvious. It should be remembered in this respect that the trend of formal grammars, which claim to corroborate the rules of hierarchical composition they formulate on the empirical basis of predicates of admissibility, are precisely concerned with this problematic: the differential of admissibility constitutes an "auxiliary" qualification, that is, it constitutes the observational background against which sentences generated according to rules defined in the principal theoretical component are then confronted.

But we know that, in this case, the condition of independence between the principal and auxiliary components is not satisfied, insofar as the "sentence", as a sample of language, is the product of a theoretical elaboration that correlatively determines the assignment of the predicate of admissibility. In this well-known case, observation is therefore governed by the presuppositions of conceptualization, and the epistemic circle closes once again.

To avoid this obstruction, one solution would be as it were to "reverse" the epistemic perspective; in other words, to give priority not to considering the theoretical device (the principal component), which would then have to be put to the test of facts (under the aegis of the auxiliary component), but rather, in this case, and in view of certain obvious and indubitable characteristics of semiolinguistic intuition, to place these characteristics in an auxiliary position and to draw the consequences concerning the specifications of the principal components susceptible to being combined with them. In other words, it would be a question of considering the auxiliary device not as a touchstone for theoretical propositions but as the premise for theoretical elaboration.

7) Awareness and difference

And so, when it comes to mobilizing a plane and a form of semiolinguistic consciousness as an auxiliary component, we shall retain the mode of categorical perception at work in the recognition of identities of language, of which Saussure makes ample mention. As a reminder, we recall the famous discussion he conducted on this subject:

"When *Gentlemen!* is repeated several times during a lecture, one feels that in each case it is the same expression; and yet variations in utterance and intonation make for appreciable phonic differences in diverse contexts—differences just as appreciable as those that elsewhere separate different words (e.g. Fr. *pomme* (apple) and *paume* (palm), *goutte* (drop) and *je goute* (I taste), *fuir* (flee), and *fouir* (search), etc.). Furthermore, this feeling of identity persists in spite of the fact that from a semantic viewpoint too there is no absolute identity between one *Gentlemen!* and the next, just as a word can express quite different ideas without seriously compromising its identity (e.g. French *adopter une mode* (to adopt a fashion) and *adopter un enfant* (to adopt a child), *la fleur du pommier* (the flower of the apple tree) and *la fleur de la noblesse* (the flower of nobility), etc.)." (CLG/B 108)

It may come as a surprise that Saussure, pointing to the irreducible singularity of each occurrence of speech, doesn't envisage overcoming this "classical" situation by resorting to the procedure used in the empirical sciences, that is, to an auxiliary component which, like a balance used to relate two qualitatively incomparable fragments of matter to a common measure (mass), could establish the identity or difference of the factualities under consideration.

However, if he doesn't do this, it is not so much that he cannot, but rather that it makes no sense to do so. For in the case of the particular identity here under consideration – "*messieurs*" – it is not a question of its objective constitution "in language" but of its phenomenal constitution, that is, its regimes of appearance and its givenness to a semiolinguistic consciousness. In this respect, as Amacker points out, "[...] linguistic units are objects of research [i.e. they pertain to

conceptualization], whereas identities are objects of observation [*i.e.* pertain to intuition].” And this observation has the nature of a perceptual judgment: it proceeds from an immediate and certain awareness of difference, or dually, of identity.

In the case of semiolinguistic occurrences, there is no question of establishing their objective qualifications on the basis of an auxiliary device. Moreover, such an auxiliary device, which operates fundamentally as a modality of abstraction and generalization (empirical conceptualization) as we have seen above, *is formally rejected by Saussure*.

Thus, when Saussure writes that « it is not permitted with impunity to substitute [...] all of a sudden abstract entities for the fact of the identity of certain concrete facts [...] (ELG 34), he says that the identification of two concrete occurrences cannot be based on their subsumption (by abstraction) under the same concept.

Correlatively, the passage cited invites us to invert the problematical perspective, that is, as anticipated, to situate the relation of identity at the observational and phenomenological level (the *fact* of identity), and then to determine the forms of semiolinguistic objectivity (principal theory) that respond to it.

And, corroborating our demonstrative progression, this is precisely the path that Saussure takes, but, in our view, with a debatable success. If Saussure has an intuition of the differential character of the forms that govern semiolinguistic objectivity, he is unable to deduce it from the observations he puts forward.

Indeed, based on observations similar to the one concerning the infinitely variable repetitions of the word *messieurs*, Saussure believes he can directly deduce (“... we draw from this...”) the differential nature of linguistic structures and, dually, the negative content of the identities that derive from them. This is made abundantly clear in the following passage:

« It is [...] completely indifferent in French whether I pronounce *courir* with a non-rolled guttural *r*, with a rolled guttural *r*, or with a dental *r* (rolled or non-rolled). These sounds however constitute perfectly distinct species, and in another language there could be a more unbridgeable chasm between one *r* and another than there is between a *k* and a *g*. We draw from this, in a general manner, the conclusion that language is based on a certain number of *differences* or *oppositions that it recognizes* and is not essentially concerned with the absolute value of each of the opposing terms, which may vary considerably without the state of language being broken » (ELG, 36).

The same line of argument can be found here:

“The principle of the negativity of signs or of significations [...] is verified from the most elementary substructions of language. It makes no difference to know whether in a given language \bar{a} is twice or three times the duration of \check{a} [...] What is crucial to know is that \bar{a} does not have the same duration as \check{a} ” (ELG 70-71).

What's more, the issue seems self-evident for Saussure: in his eyes, it is a simple matter to establish the relevance and the empirical truth of differential structures in language. For example: « It is easy to show that the presence [of a] determined sound [in a language] has value only through opposition with other sounds present; and this is the first, rudimentary application, but already incontestable, of the principle of OPPOSITIONS, or RECIPROCAL VALUES, or NEGATIVE and RELATIVE QUANTITIES that create a state of language » (ELG, 25).

To sum up, and very schematically, Saussure's reasoning is as follows: it is unreasonable to relate the infinite variety of realizations (semantic or phonic) of a vocable under a positively defined conceptual identity, *therefore* the unity of this variety can only be established by contrast, by excluding all occurrences that do not fall under it: “[...] to want to exhaust the ideas contained in a word is a perfectly chimerical undertaking [...] Now, as from the age of 15 or 16 we have a sharp sense of what is contained not only in these words but in thousands of others, it is obvious that this sense rests on the pure *negative* fact of the opposition of values, given that the time [...]

to know the positive value of signs would have missed us a hundred times and a thousand times » (ELG, 77).

The fact remains that this "demonstration" is very quick and approximate: it is not clear why, starting from the impossibility of unifying an inexhaustible diversity of occurrences of unpredictable extension, and assuming that a unity A is recognized, we must necessarily conclude on the fact of a negative identity, that is, an identity established in opposition to A.

8) Wrap-up and return to differentiation

The main features of the problematic landscape that thus emerges and the demonstrative pathway that follows are as follows:

- (i) giving credence to Saussurean views, semiolinguistic identities are subject to differential determination (negative identities),
- (ii) this form of determination, insofar as it claims to deliver the facts considered in their objectivity, has a principal component with a hypothetical value, and whose experimental evaluation is functionally correlative to an auxiliary device
- (iii) but, still giving credence to Saussurean views, no auxiliary device seems to be able to be articulated with the principal device of differential qualifications, precisely *in such a way that a process of conceptual abstraction can be accomplished in this manner*, i.e. in such a way that a conceptualization of the fact under consideration is possible.
- (iv) however, considering the auxiliary device solely from the viewpoint of its observatory function, and knowing that semiolinguistic consciousness is the matrix of an observation of the phenomena of its order – observation even when reduced strictly to the regimes of the identical and the different -- we can attribute to this semiolinguistic awareness the status of a "minimal" auxiliary device.

To go one step further, and even to reach a conclusion, we'll now need to open a short critical discussion of the Saussurean concept of differentiability.

Let's recall, if need be, that Saussure, embracing a structural ontology, recognizes the primacy of relational identity over substantial identity, and, more precisely, specifies relations as being of a differential (or negative) nature. Thus, unlike Hjelmslev, for example, who constructs a relational ontology on the basis of relations of dependence, for Saussure the mode of relations at the foundation of structural objectivity is that of difference.

Thus, discussing the aspectual content of the French verb, Saussure observes that "Instead of *ideas given in advance*, we find in all the foregoing examples values emanating from the system. When they are said to correspond to concepts, it is understood that the concepts are purely differential and defined not by their positive content but negatively by their relations with the other terms of the system. *Their most precise characteristic is in being what the others are not.*" (CLG/B 117, *my emphasis*)

But this conception of a "negative" identity (...*being what the others are not* ...) is not without its difficulties.

Indeed, the definition of negative identity is circular and sterile, at least if we consider it solely on a formal functioning plane. As Itkonen points out: "Suppose that I attempt to define A, B, and C in 'purely negative terms,' that is, by what they are not. The result, apart from not being very workable, will always contain two positive terms and, circularly, B and C will be implied in the definitions of B and of C." (Itkonen 1991, 298-299)

The way out of this circle is provided by the notion of *value*, insofar as it allows us to split the planes of differential functioning and to escape the loop mentioned above.

Remember that, according to the Saussurean view, a "value" is constituted at the intersection of two dimensions, one "external", which bears a relationship of "exchange" with entities outside the system to which this value belongs, and the other "internal" in the sense that it is constitutive of the *system* of values: [...] all values are apparently governed by the same paradoxical principle.

They are always composed: (1) of a dissimilar thing that can be *exchanged* for the thing of which the value is to be determined; and (2) of similar things that can be *compared* with the thing of which the value is to be determined.” (CLG/B 115) (while clarifying that comparison designates a relation interior to the system: thus, for example, the case of a “five-franc coin” that can be “ [...] compared with a similar value of the same system, e.g. a one-franc coin » (CLG/B 115)

The concept of *value* thus contains the principle of an entanglement of a relational dimension and a substantial dimension - an entanglement that Saussure is known to have "despaired of" [Saussure in Bouquet 1992, p. 89), but which we shall see is explained and finds its consistency in a differential conception of semiolinguistic identities.

This double dimension of value can be approached in the definition of negative identity, one of whose most famous formulations is: “The most precise characteristic [of a sign A] is in being what the others [signs B, C...] are not.” (CLG/B 117). Or more simply, in its "canonical" form, and for the purposes of discussion: "A is what B is not". In fact, we need to distinguish here between two meanings of the predicate "to be" that is carried by B. And to make this distinction clear, let's return to the examples Saussure gives us.

Discussing “The value of letters [which] is purely negative and differential” (CLG/B 119), Saussure notes that “The same person can write t, for instance, in different ways: [and] the only requirement is that the sign for t not be confused in his script with the signs used for l, d, etc.” (CLG/B 120). More generally, the differential principle illustrated here is that “[...] a segment of language can never in the final analysis be based on anything except its noncoincidence with the rest.” (CLG/B 118)

Clearly, what is « in his script » designates a concrete occurrence of a certain letter, which in its material characters never "coincides" with the occurrences of another letter. But the "negative" graphemic identity of this occurrence belongs to another plane, that of forms and relationships. So, when it comes to the negative identity of a sign, *one must distinguish between (and even further articulate) the material fact of "non-coincidence" and the formal fact of an oppositive determination.*

To do this, let's note that in the phrase "what B is not", the predicate "to be" superimposes two meanings: on the one hand, according to the first dimension of value, that of a relation of "exchange" between B and its various material realizations, *each one taken in turn*, and, on the other hand, according to the second dimension of value, that of an oppositional relationship with A.

In the first sense, "What B is" designates the *set* of concrete occurrences of B, or more precisely – and this is an important point – the collection of these occurrences that are in turn considered as "being B", but without B carrying a principle of unity and identity for this collection. In other words, and abruptly put, B is not a concept but the title of a grouping.

Let's examine then this "what B is not", which is the *definiens* of A.

First, let's note that recourse to substances enables an escape from definitional circularity. For, in order to define A, i.e. "what B is not", it is necessary to qualify "what B is not", avoiding the converse definition "B is what A is not", which appeals to A. But this is only possible by a kind of unhooking of the formal circularity between B and A, that is, in this instance, by resorting to the external dimension of value, which opens onto substances and gives access to "what B is" (here, "being" is taken in its "external" sense). It is then possible to characterize A as "what B is not" by excluding "what B is".

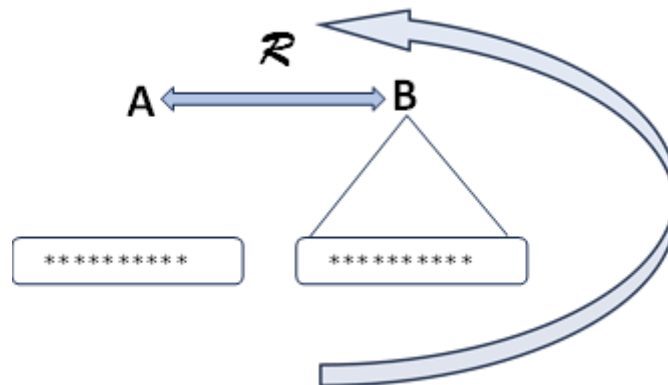
But this characterization is insufficient. For the heterogeneous diversity of "that which is not B", which is then placed in exchange relations with A, does not find in A the principle of its unity. At this stage, in fact, the term A is merely the title of a heterogeneous collection rather than its principle of identity, whose content would be found in each of its occurrences. In other words, the semiotic connection between intention (meaning) and extension (reference) is not yet complete.

Moreover, and as we know, to establish the diversity of "what B is not" under the unity of A, we cannot proceed directly, i.e. in the mode of subsumption under a concept, which is to say, by way of abstraction-generalization.

To achieve this, it is thus necessary to take indirect routes, in particular by making use of the negation of the predicate "to be" in its formal meaning attached to the second dimension of value.

Indeed, we can move from the diversity of "what B is not" to the term A, (i) by taking, first on the level of substances, the "complementary" connection between "what B is not" and "what B is", then (ii), given B in the quality of value, by "moving up" from "what B is" to the term B, and finally (iii), by mobilizing, this time on a formal level, the opposition R between A and B, and thus reaching A.

This three-stage construction of the negative identity A in relation to B ("A is what B is not") can be illustrated as follows:



But this construction is not complete: it remains imprecise and lacking on several points, which we shall now discuss.

First, in accordance with the concept of value and the "canonical" definition of differential identity, the "negative" relations that are brought into play operate on two levels: that of the semiolinguistic system proper, and that of substance. But on each level, these relationships are insufficiently determined.

Then, if we accept that distinct formal modalities, on the one hand, govern semiotic identities at their own level, and on the other, govern substantive configurations, then the requirement of a necessary unity of semiolinguistic objectivity is undermined. Once we have clarified the nature of the relations established at each level, it is thus important to *understand the possibility and the principle of their necessary connection*. Recourse to the morphodynamic apparatus will be crucial in this respect.

As concerns the relationship between negativity and substance, it has not yet been fully elaborated. At this stage, negativity functions as an operator in the construction of more or less complementary sets: it is the idea of partition that prevails here, that is, the idea of a division into mutually exclusive subsets, the union of which would make a totality. But we know that the Saussurean intuition of negativity in substance is that of boundaries, an intuition not concerned with a theory of sets but with topology: "The linguistic fact can therefore be represented in its totality — i.e. a language — as a series of contiguous subdivisions drawn at once on the indefinite plane of jumbled ideas (A) and the equally vague plane of sounds (B)" (CLG/B 112). Difference is thus thought of as a system of discontinuities (a network of boundaries) that categorize a supposedly homogeneous space into adjoined sub-domains. These structures of discontinuity, which, in a single conjunctive and disjunctive moment, divide an intrinsically undifferentiated substrate into adjacent parcels, constitute the fundamental forms of a "pure" structural intuition.

In the case of the former, perhaps something like, "...an intuition not concerned with a theory of sets but with topology..."

As for the oppositional relationships within the linguistic system, which is to say, along the second dimension of value, we won't be tackling them head-on but will reach them laterally. Indeed, taking up the discussion again from the problematical angle we have chosen (cf. supra), namely that of determining the forms of the observational component of a semiolinguistic theory, and building on J. Petitot's work on categorical perception (particularly in *Les Catastrophes de la parole*), we will mobilize the morphodynamic apparatus to account for (i) oppositional relationships at the level of the semiolinguistic system, and, in the same movement, (ii) the necessary connection of the two dimensions of Saussurean value, i.e., on the one hand, the oppositional relationships between terms in the system, and, on the other, the network of boundaries categorizing substances.

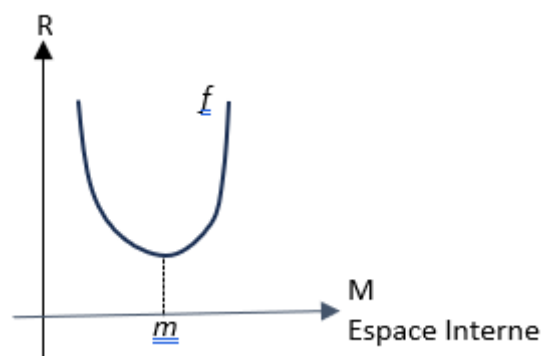
9) The morphodynamic solution

Let us first consider the faculty of semiolinguistic recognition, which in one of its elementary forms, as Saussure explains (cf. above), is that of recognizing the same word in the multiplicity of its phonic or semantic realizations. This is clearly a perceptive faculty, which, on the empirical level, belongs to the consciousness of a speaker, and, on the epistemic level, falls under the auxiliary dimension of a semiolinguistic theory. Indeed, just as the forms of intuition of a physical body, which are those of space-time, constitute (cf. supra) a framework for observing certain phenomena of nature, so semiotic perception in its own forms naturally lends itself to the function of an observational (i.e. auxiliary) device of a (principal) theory that delivers the forms of a semiolinguistic objectivity.

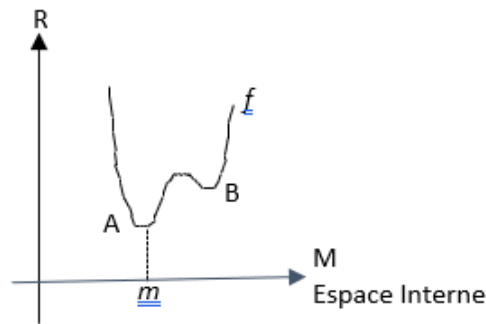
It now remains to determine the forms of this semiolinguistic perception, here in its specific function of recognizing the "same or the other" – that is, the capacity to identify or differentiate vocables accomplished by two concrete occurrences. Note that this awareness of "the same or the other" is a relational awareness: its object is a relationship of identity or difference, not the particular identities involved.

Morphodynamic theory provides us with the formal and functional expression of this categorical consciousness. We propose here to provide, roughly and incompletely, a few key stages in its construction. For a complete and rigorous presentation, we refer of course to the works of R. Thom and J. Petitot.

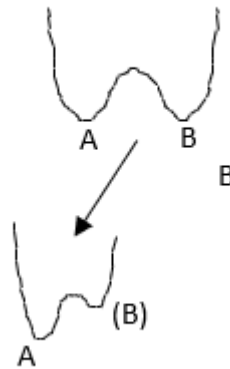
Starting from a cognitivist perspective, and supported by one of the (Kantian) maxims of reason, namely the principle of least action, we can qualify a certain state of semiolinguistic awareness by the value m that minimizes a certain potential function f defined on the "internal" space M of states of awareness and with values in R . We will denote as F the space of dynamics f .



However, as this is a categorical consciousness of simple identification/differentiation, the potential f should be considered independently of the specific value m that it determines in M . We are therefore interested in f modulo, the variations (diffeomorphisms) of the coordinate system in which f is defined, i.e., a class of equivalence noted f^* , referred to as the *orbit* of f . By construction, the elements of f^* present the same qualitative type, given by the number and the relative positions of its minima and maxima. Clearly, it is the qualitative type that is the relevant object of categorical consciousness, particularly insofar as it is able to express oppositional relations between states of consciousness. Indeed, let's consider (below) the simplest case of a function with two unequal minima A and B separated by a local maximum.



We know that each minimum determines a state, and by choosing a convention of actualization (Maxwell), it is the absolute minimum (here A) that is actualized at the expense of the relative minimums (here B). State A is thus qualified, not from the viewpoint of a value m that it would determine in M , but with regard to the qualitative type of function in which it takes place. In this case, the current state A is specified from the viewpoint of the existence of competing states (in this case B), which are then virtualized. But for such a relation of competition (for actualization), here to A's advantage, to constitute a genuine opposition, the virtual state B must be able to avail itself of a possible actualization. Indeed, A can only enter into full competition with B if B is not fixed in a virtual position, as in the only functional configuration considered here. In other words, the configuration in which A is actualized must be linked to a configuration in which the possibility the actualization of B (versus A) is enacted, i.e. in a functional schema in which A and B are on an equal footing in terms of their claims to actualization (cf. figure below). And it is insofar as it derives from an (unstable) form in which states A and B are equally liable to actualization that the functional schema in which A is actualized expresses an authentic opposition between A and B.



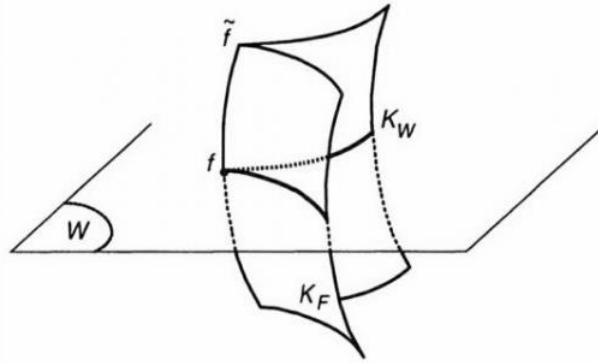
It follows from these considerations that the qualitative types of potential functions adequately account for the relations of opposition between terms insofar as they proceed from dynamics of engendering initiated in forms capable of giving rise to various actualizations. To this end, we introduce, *via* a topology, the notion of *stability*: a form is said to be stable insofar as its infinitesimal deformations do not modify its qualitative type. As the previous example illustrates, forms, whether stable or unstable, are obtained by the stabilization of forms with a higher degree of instability. This is precisely the situation studied by morphodynamics.

But before we get there, we can already conclude that, when considered in terms of emergence, qualitative types of potential functions adequately take account, on the one hand, of the relations of opposition between terms, and, on the other, of a simple consciousness of the "same or the other": the "same" being A actualized in its opposition to B, and the "other" being B versus virtualized A. The forms and the regimes of the observational device of a semiolinguistic theory, therefore, are thus acquired.

Over and above these general considerations, morphodynamics aims to uncover and to classify the structural configurations established according to the mode of opposite relationships as previously described, which are correlative to the geometry of unstable forms.

As J. Petitot explains, to deal with this problem, which in its general terms is extremely complex, the morphodynamic approach restricts itself to a "good situation" where the stabilized forms of a singularity (an unstable form) can be approached and studied by reduction to a finite-dimensional "transverse" model:

"Let $f \in K_F$ be an unstable element, and f^* its orbit [...] F is of infinite dimension, as is f^* in general. The gap between f^* and F , i.e. the dimensional defect that f^* lacks to "fill" F in the neighborhood of f , will be measured by the (infinite) dimensional difference of F and f^* , i.e. by the dimension c [codimension of f] of a "subvariety" W of F transverse to f^* in f and of minimal dimension. [...] We shall then restrict ourselves to the case of unstable elements of finite codimension where we can do geometry, and we shall say that the situation is "good" if the following conditions are satisfied: (i) locally in f , the pair (F, K_F) is isomorphic to the direct product of f^* by the pair (W, K_W) where K_W is the intersection $K_F \cap W$ of K_F with W . In this case, we say that (W, K_W) is a *transverse model* of K_F in f , (ii) all transverse models are equivalent for a natural equivalence relation" [152-153].



One of the major consequences of this "good situation", which gives way to a reduction of the analysis of the stabilized forms to the level of a transverse model, is to reveal an articulation between the space F of dynamics defined by potential functions on an internal space M and an external space W' (locally assimilable to W) - an articulation to be understood as a control of the dynamics (potential functions) of the internal space.

Indeed, as J. Petitot emphasizes, "[...] W being of finite dimension c , it is isomorphic to a neighborhood W' of R_c and we can therefore interpret W as a field [...] $\sigma : W' \rightarrow F$ which to $w \in W'$ associates the corresponding element $f_w \in F$ " [119], i.e. as a control by c parameters of the dynamics of F .

Further, and considering W' as an "external" substrate space, W' will find itself "retroactively" categorized by a system K of boundaries that are « [...] the trace of K_F on W [i.e. $\sigma^{-1}(K_F \cap \sigma(W))$] by the intermediary of σ » [MdS 106]. In other words, the categorization of a substance (substrate space) « [...] is the trace on the control space of the instabilities and conflicts of the internal states that it controls » [MdS 106].

Thus, the transverse model contains the principle of a necessary connection between the plane of structural identities and that of substances, or, more generally, between the two dimensions of Saussurean value. Indeed, as we've seen, the transverse model introduces an "external" space W' , which is categorized in relation to dynamic instabilities on an "internal" space. Knowing that the internal space of dynamics is the place where the interplay of oppositions is woven – in other words, the place where structural identities are constituted – and, on the other hand, that the external space W' can be likened to a substance (e.g. of content or expression), it follows that structural identities are functionally correlative of a substance - a substance whose elements control the play of oppositions, and which is in turn categorized by a system of boundaries.

10) To conclude

Resuming the essential of our demonstrative progression, we note that, on the one hand, by adopting the epistemic grid of empirical theories - precisely by (i) bringing the dimension of a semiolinguistic consciousness to the rank of auxiliary theory, and (ii) approaching the principal component with regard to the specificities of the auxiliary component - and, on the other hand, by appealing to the morphodynamic device, it has been possible to complete and to consolidate the Saussurean approach to differentiability.

In effect, I wanted to show that the construction of negative identity on the basis of its "canonical" formulation (cf. §8) and the logic of a necessary connection between the formal and substantial components are respectively accomplished and established when they are approached and reflected upon in a morphodynamic light. The introduction of this morphodynamic perspective, moreover, is motivated by the determination of an "observational" device accounting for a differential semiolinguistic consciousness of the "same and the other".

11) Bibliography

- Amacker, R., 1975, *Linguistique saussurienne*, Droz, Genève – Paris.
- Auroux, S., 1998, *La raison, le langage et les normes*, PUF, coll. *Sciences, Modernités, Philosophies*, Paris.
- Bouquet, S., 1992, « La sémiotique linguistique de Saussure », *Langages*, n° 107.
- Godel, G., 1969, *Les sources manuscrites du Cours de Linguistique Générale de F de Saussure*, Genève: Droz, coll. *Publications Romanes et Françaises*, 61.
- Granger, G.-G., 1992, *La vérification*, O. Jacob, Paris.
- Itkonen, E. 1991, *Universal history of linguistics*. Amsterdam: John Benjamins Pub. Co.
- Merleau-Ponty, M., 1964 (1960), *Signs* (R. C. McCleary Trans), Northwestern University Press.
- Milner, J.-C., 1989, *Introduction à une science du langage*, Le Seuil, coll. *Des Travaux*, Paris.
- Petitot, J., 1985a, *Les catastrophes de la parole*, Maloine, coll. *Recherches Interdisciplinaires*, Paris.
- Petitot, J., 1985b, *Morphogenèse du sens : 1, Pour un schématisme de la structure*, PUF, coll. *Formes Sémiotiques*, Paris.
- Petitot, J., 1992, *Physique du sens : de la théorie des singularités aux structures sémio-narratives*, éditions du CNRS, Paris.
- Petitot, J., 2004. *Morphogenesis of meaning*, Series "European Semiotics" (P-A. Brandt and W. Wildgen eds), Peter Lang, Bern, Volume 3.
- Piotrowski, D., 1997, *Dynamiques et structures en langue*, Paris, CNRS Éditions, coll. *Sciences du Langage*, Paris.
- Piotrowski, D., 2009, *Phénoménalité et Objectivité Linguistiques*, Paris, Champion.
- Piotrowski, D., 2017, *Morphogenesis of the Sign*, Springer Publisher.
- Popper, K., 2002, *The Logic of Scientific Discovery*, Routledge, London.
- Saussure, F. de, 1959 (1916), *Course in general linguistics* (W. Baskin, Trans.), New York, Philosophical Library, 36.
- Saussure, F. de, 2002, *Ecrits de linguistique générale*, Gallimard, coll. *Bibliothèque de philosophie*, Paris.