Imagination and Potentiality: The Quest for the Real

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The Imagination and Its Technological Destiny

Abstract: The tradition of Kant's critical philosophy developed the concept of imagination rigorously and productively. In this article, I shall defend the suitability of placing this concept in a paleoanthropological frame and linking it to the cognitive practices – predominantly sensorimotor, interactive and those directed at the emergence of technologies – which preceded and prepared for the advent of articulated speech. Special attention will be paid to the internalization processes of these practices and their effects on human conduct. On the basis of this discussion, I shall defend the theory by which the advent of denotative articulated speech entailed a profound reorganization of the technical performances attributable to the imagination and the relative internalization processes. Moreover, the origin of articulated speech inaugurated a singular story, that of the relationship between word and image. In my conclusions, I shall describe a major outcome of this within the framework of the new electronic technologies.

Keywords: Kant, Heidegger, imagination, material engagement, reflexivity, articulated speech, digital technologies

1 Introduction

I shall speak here of "imagination" taking as my basis Kant's critical philosophy, which conferred a rigorous and productive theoretical status on this concept. I attach epistemological importance to this choice and shall immediately present the motivations behind it.

In a famous passage at the end of the Introduction to his *Critique of Pure Reason*, Kant mentions the fact that "there are two stems of human cognition, *which may perhaps arise from a common but to us unknown root*, namely sensibility and understanding, through the first of which objects are given to us, but through the second of which they are thought."[1] So surprising is this passage – since the clear distinction between the two stems of human cognition is a salient point of critical philosophy – that it has been attributed with the value of a literary image that underscores the essential unity of the transcendental subject. However, at least one (great) philosopher took the passage seriously and tried examining it in-depth, pursuing the thread by which Kant's "common root" lies in the transcendental imagination, which contains both the legislative instance of the intellect and the receptive one of sensibility. I refer to Heidegger and his 1929 "Kantbuch",[2] to which I shall here only adhere as regards his fundamental theoretical premise, i.e., that to properly understand Kant's thought, we must deconstruct it and consider it a remarkable episode in the great interrogation on the being of beings which has,

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1 Kant, *Pure Reason*, 135, my italics.
2 See Heidegger, *Kant and the Problem of Metaphysics*.

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explicitly but more often implicitly, engaged the entire history of Western philosophy and which Heidegger calls "metaphysics". Kant's transcendentalism, in particular, responds to the question on the being of beings by arguing the theory – conveyed via the famous image of the "Copernican turn" – by which objects of knowledge "conform" to the conditions under which they are received and experienced by that particular finite being that is the human being. The "particularity" I have just mentioned must be seen as the essential "opening" (or "transcendence") of its "being-there", i.e., the fact that the latter relies on the beings "given" to it but is also able to distance itself from them (transcend them) and recapture them in an original manner, thanks to the imagination (I shall return repeatedly to this point but with a very different approach from that of Heidegger).

Unlike Heidegger, I shall here propose that we "deconstruct" the Kantian problem of the imagination and link it to a paleoanthropological frame. More precisely, I propose that this enables us to provide a *complete and rigorous theoretical representation* of Kant's theory on the common root which will show that it is not to be seen as a mysterious "original unity" of the two elements of knowledge but as *a specific form of their relationship*, which becomes visible and analyzable – with some significant theoretical advantages – *if and only if* we take paleoanthropology as our starting point.

The point on which I differ from Kant and from Heidegger is that their *starting point* when thinking of the human being lay in its being essentially inherent to the *linguistic being* – so they saw it as a *zoon logon echon* – and did not ask themselves about the *birth* of language or, more precisely, the conditions in which that being's progenitors acted and thought during the very long period of preparation for the formidable technical invention that was articulated speech. What I would like to show, however, is that the issue of speech and of its invention is of crucial importance to an understanding not only of the nature of the imagination but *also of its evolutional and, ultimately, contingent–historical destinies*. Indeed, it is proven that for a period of time calculable as many hundreds of thousands of years, the *Homo* genus practiced, and with established evolutional success, the specific resources of the imagination – in particular those expressed via its technical creativity –[3] without (yet) being aided by the most powerful form of linguistic expression: articulated speech, which as we know could not appear in its complete form (examined in Section 5) *before* some major morphological and genetic transformations that apply to *Homo sapiens*, and seemingly to it alone.[4]

The starting point is this: if we link the overall adaptive, intimately embodied and predominantly technical practice of the *Homo* genus *before* the invention of articulated speech became possible to an "extended" concept of *imagination*, we must also acknowledge that exercising the said practice entailed skills and forms of agency that invested the sensible and intellectual orders and the receptive and legislative instances at the same time, just as occurs in the "common root" evoked in the Kantian passage and commented at length by Heidegger in his essay. The first thing we must do at this stage is clarify, in an empirically fitting manner, this prelinguistic synthesis of sensibility and intellect, which I have so far presented without dissociating it fully from the traditional metaphysical opposition between sensible and intelligible.

2 Interactive imagination. "Material engagement" and its forms

A qualifying point of the Kantian imagination is its interactive nature. "Imagining" means many things but to Kant it primarily means *interacting* with the world-environment. It is a cognitive interaction, such

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3 See Montani, *Tre forme di creatività*.

4 In the extensive literature linked to this point, see Fitch "The Evolution of Speech: a Comparative Review", Fitch, *The Evolution of Language*, Lieberman, *Toward an Evolutionary Biology of Language*; Mithen, *The Singing Neanderthals*; Tattersall, "Language Origins: An Evolutionary Framework"; Cox, *Now You're Talking*. The theory I argue below is that, without the changes that occurred in the morphology of *Homo sapiens* (in particular the lowering of the larynx and the development of an acoustic apparatus compatible with the reception of refined phonation), the genetic emergences (e.g., the appearance of the *FOX P2* gene) would not have produced the same effects on the invention of articulated speech.

as when we combine several scattered data (think, for instance, of observing natural phenomena and tracing the laws that govern them) in a coherent schema. But it is equally also a perceptual–motor interaction, such as when we discover the properties of an object, e.g., a sharp flint, a flexible branch or a weavable fiber. In an important publication, Lambros Malafouris presented a very accurate model of this interactivity – the material engagement theory (MET) – linking it in particular to the emergence of technologies, and their products, within the context of human life forms.[5] The many and convincing examples adopted by Malafouris include the manufacture of a vase by suitably modeling a piece of clay. Observing this process from the MET perspective underscores not only that the affordances exhibited by the clay – malleability, elasticity, relative permeability, resistance, etc. – contribute to the emergence of the artifact *as much as* do the sensibility of the potter's hands and the movement of the potter's wheel, but also that the whole productive operation amounts to a complex *cognitive event* during which the "extended mind"[6] that has participated is *remodeled* and initialized for intentional skills that did not preexist the event itself. In other words, the design intent must be seen as an emergence in the *material engagement* process and not as something that instructed it in advance and preferentially. It is clear that, in material engagement, the cognitive and perceptual–motor aspects cannot be disassociated in any way – precisely as in the common root mentioned in Kant's passage.

Recently, along with Don Ihde, Malafouris reiterated the programmatic nature of his approach and reproposed the classical figure of *Homo faber*; if we humans correspond primarily to this figure, rather than to that of *Homo sapiens*, it is less for our aptitude to produce artifacts and more because "We make things which in turn make us."[7] The reversible nature of the relationship and the relative ensuing emergences are therefore the principal requisite of the MET.

What is "sensible" and what is "intelligible" in material engagement appear therefore to be subordinate to the interactive, general and equal event, within the sphere of which the role-play takes place. It is, nonetheless, undeniable that, against the backdrop of this primary, constitutive and equal interactivity, the parties involved can be enabled to *exercise some important distinctions*. In the case of the potter's work, for example, it is not the same thing in all senses if the hands respond to the stimuli offered by the clay by *directly* modeling an object or, conversely, by *making it rotate* on a potter's wheel moved by the feet – and then, perhaps, baking it in a kiln. In other words, the order and complexity of the emergences, as too the very nature of the affordances displayed by the material, seem significant and must be further probed, duly recognizing the impact on the interactive event of the *feedback* provided by the quality of the skills internalized and processed over time. For example, by the fact that a design intention emerges during the interaction, together with more or less explicit forms of self-awareness and reflexive control (I shall return to this). Indeed, we can presume that only *after* extensive training in the direct manual modeling of clay and a stable *internalization* of its fundamental protocols did the schema of rotation on a suitable support *emerge* as pertinent to the interactive performance of the imagination. That is, a different design intention linked to other objective affordances of the clay that had not previously been manifested. The same, of course, applies to the firing.

In other words, significant differentiations appear in the unitary event of material engagement; these sometimes tend toward a profound *sensible correspondence* between the human agent and the affordances of the material and other times tend toward a certain *intellectual distancing* and a certain *reflective objectivization* which can be registered, in particular, in the internalization processes of that particular technical skill – or empowerment as I prefer to say. As Malafouris writes (2013: 176) concerning the production of stone artifacts: "The knapper first thinks *through* and *with* the stone before being able to think *about* the stone and hence about himself as a conscious and reflective agent."[8]

The issue of the internalization of technical skills requires further investigation.

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5 See Malafouris, *How Things shape the Mind*.
6 See Clark and Chalmers, "The Extended Mind". Malafouris, *How Things*, 227, defines his approach as a "strong version of extended mind theory."
7 See Ihde and Malafouris, "Homo Faber Revisited", 195.
8 Malafouris, *How Things*, 176.

3 Technical empowerment and internalization processes

To properly address the "internalization" phenomenon, we must say a few words on the opposite process which clearly precedes it and constitutively characterizes the technical dimension. The term "externalism" is commonly adopted in the philosophical vocabulary – I am thinking, for example, of the theories that reference the already cited paradigm of the extended mind – but it is an unfortunate term. In fact, it favors the activation of a semantic schema in which the two sides – external and internal – of the process are assumed to be separable and are each time credited with unidirectional actions (internally to externally or vice versa). I would like with some very simple examples to show why this is a misleading schema.

The term "externalization" applies to three groups of fairly different phenomena, only one of which vindicates it satisfactorily.

If, for example, we are acting in the sphere of the memory, we can say that externalization occurs whenever we delegate the archiving of a mass of data that would be hard to contain in its entirety in our minds to a technical device. This is what happens with the – powerful, easily managed, stable and fast – memories of our smartphones. Here externalization stands for the "delocalization" of pieces of memory from the internal to the external.

Let us now move to another kind of externalized mnemonic aid, the far more archaic and seemingly more rudimentary model of "tying a knot in a handkerchief". Brief consideration will suffice to realize that the principal difference from the first example consists in a large increase in the *degree of interactivity* that this type of externalized aid produces with whosoever makes use of it. Tying a knot in a handkerchief serves to remind us that we have a certain program of actions to perform, but it has no direct link to that program, unlike the contact list stored in our smartphone, where the correspondence is 1:1.

The degree of interactivity seems to signal an important and clear separation, and draws the attention to a certain dissymmetry between the external and the internal, the relationship of which seems to correspond to that of a *circulation* that helps *co-determine* both poles. In other words, the simple example of tying a knot in a handkerchief shows us that our two terms – the internal and the external – must indeed be defined after *taking their relationship as the starting point*.

Let us now see this more fully in the case of a more complex action, such as the acquisition of a technical empowerment, e.g., the correct and effective execution of a coordinated sequence of movements such as is required of the "serve" in a game of tennis.

If you have ever done something of this kind, you will know full well how long it took you to incorporate, process and memorize the sequence of movements; you will also know that your skill was established one step at a time and by incorporating *a large number of* – sensorimotor, material, technical and cognitive – *elements* in the interactive action, each of which contributed to the success of the action. If someone were to ask me, I could execute a respectable simulated sequence of a tennis serve without a racket and ball right now but only because "I know" what holding a racket entails, how much a tennis ball weighs, the optimum height for the toss preceding the hit and how my feet must feel and guarantee a firm grip on the ground, etc. I have spoken of "knowing" but I am actually referring to a form of embodied *internalization* – a technical empowerment. Just as in material engagement, this has been constituted with the *equal* participation of the hand that grips the tool, the motor coordination of the whole body, an evaluation of good distances, a sense of overall spatial relations, the racket and the ball, without forgetting the type of terrain on which I take up my stance and move (clay or concrete), the shoes I am wearing and so on. The *radical mediation*[9] occurring among all the "parties" involved as well as the clear and constant reciprocal *feedback* between externalization and internalization emerges here more forcefully and persuasively than in the example of tying a knot in a handkerchief.

Anyone who has acquired sufficient technical training in the game of tennis knows that there is nothing "instrumental" in their skill with a racket (or their decision re the force and direction of the shot and so on). You become *all one* with that extension of your body and your sensorimotor *agency* and can

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9 Richard Grusin originally developed this concept and highlighted its ontological aspects in his article *Radical Mediation*.

only conduct yourself more or less passably and brilliantly. The point is that the technical empowerment highlights a very close, and characterizing, bond with a sensibility that is "naturally" capable of extending itself into artifacts, whether manufactured (e.g., a racket) or not (e.g., a mere stick picked up off the ground). Borrowing a Gilbert Simondon[10] term but applying it rather differently, I link this sensibility to a *techno-aesthetic*. However, we could also say, referencing Walter Benjamin, that technologies "innervate" our perceptive organs.[11] Lastly, it is clear that these techno-aesthetic modifications are closely linked to the performances of the interactive imagination which are, in turn, integrated with new rules.

3.1 Internalization: empowerment and reliance assignment

With the technical empowerment instituted, it becomes interesting to understand to what degree its internalization has been the focus of potential negotiations (or possibly of critical control). Some automatisms might, for example, be usefully eliminated. While I was still playing tennis (as an amateur but passionately and assiduously), the "topspin" serve began to circulate whereby a specific rotation of the stroke transmitted an effect to the ball that translated into an "irregular" spike in the bounce. I never learned to respond to that stroke (I was already too "old" to work on it) and I suffered the consequences. However once, during a friendly match, I noticed with some wonder that my opponent, far more capable (and younger) than me, had noticed the great difficulty his strategy was causing me and started serving in a more traditional manner, without by so doing having to forego his design of winning a point (a friendly match is still a match). When I asked him afterward why he had stopped employing that winning stroke, he said that "it had been spontaneous" when he realized my difficulty.

What emerges from this frame is that the technical empowerment features a distinctive oscillation between the poles of automatism and disautomatization, the default response and that ensuing – insofar as is possible – from "prior" processing. I have placed inverted commas around the word "prior" because in the tennis example above, it is hard to associate my opponent's generous decision with a premeditated action that can be placed at a precise point in a linear time sequence. Actually, what is in play here, along with a more complex temporality, is an interlacing of reflexive aspects and unintentional aspects (my opponent's stated "spontaneity"), which I shall try to clarify further with the aid of another example.

I find a remarkable distinction recently proposed in the paleoanthropological field[12] (Plummer 2004, Bruner et al. 2016) extremely helpful. According to this distinction, the evolution of the *Homo* genus passed from a very long period during which its adaptive action can be described as "technically assisted" to a later and far shorter period during which this action became "technically dependent". We must explain that this *dependency* is not to be understood in the negative sense of *addiction*. It must rather be seen as a form of *assignment*, dependency in the sense of *reliance*, we might say.

The point that emerges here is that our reliance on technique is a moment not only of opportune disautomatizations but also of *intrinsic plasticity*. This plasticity is directly proportional to the commitment and profundity with which the internalization processes have been set in motion and developed. I would say that my opponent's conduct during the tennis match is a good example of this plasticity, providing a manifestation of it that, all things considered, I wish to link to the "ethical" sphere. In other words, only strongly internalized technical empowerments can be steered "spontaneously" toward processed and responsive conducts – in this specific case that of foregoing a sure winning shot and providing a more even playing field.

Articulated speech, without doubt the most powerful technical empowerment that the *Homo* species has ever practiced, makes this situation even more explicit. In our "natural" reliance on language, it is

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10 See Simondon, *Sur la technique*, 373–96.
11 See Benjamin, *The Work of Art in the Age of Mechanical Reproduction*.
12 See Plummer, "Flakes Stones and Old Bones"; Bruner et al., "Digito ergo sum: cervello, corpo, ambiente".

clear that we are only able to put it into action plastically after having internalized it and made it the focus of processing by characterization.[13] Here, it should be noted, "plastic" does not mean innovative or unpredictable (according to the aesthetic sense of this property); rather, it means that the linguistic activity proves capable of implementing *a creative and responsive relationship with the world of practice*,[14] enriching it with new components and reorganizing the relationships, also in the ethical sphere examined above.

4 Transcendence of the human being and articulation of the world of practice

To summarize this discussion, let us return to the example of *Homo faber*'s technical creativity in the version linked to the potter's work and note that the interactivity of the imagination is exercised here in two closely interconnected ways. The first way is *receptive* and is a careful listening to the affordances exhibited by the world-environment. The *Homo faber* imagination interacts with the malleability of fresh clay, complying with its ability to suggest object emergences: a bowl for example. The second way is *susceptive* and consists in eliciting and provoking the appearance of other affordances, equally objective but more reliant on the intellectual aspects of the imaginative mediation which, in this case, acts in a more explicitly legislative manner. To continue with our example, let us think again of the potter's wheel that, moved by the potter's feet, mediates between the malleability of the clay and the skill of the hand.

With regard to the first way, I have spoken of listening and suggestion. The imagination feeds on the world-environment, thanks to the fact that it opens spaces of play linked to the identifiable *salient* affordances in the world-environment.[15] The second way is susceptive and not equally playful; to describe it, I have intentionally adopted a term – "provocation" – that Heidegger reserved for modern technology: *Herausforderung*.[16] I believe this term must be generalized to cover the entire epistemological configuration of the interactive imagination. This interactivity is not simply free play, it is also a way of provoking the world-environment, an energic way of uncovering the hidden virtualities: the *supervenient* affordances.

At this point, I can better clarify the thread of Heidegger's reading of Kant and reformulate it on the basis of the paleoanthropological interpretation I expressed at the start. As we have already seen, the fundamental point concerns transcendence as an essential opening up of the human being. "Thus, transcendental knowledge – Heidegger writes – does not investigate the essent itself but the possibility of the precursory comprehension of the Being of the essent. It concerns reason's passing beyond (transcendence) to the essent so that experience can be rendered adequate to the latter as its possible object."[17] Note that here "rendered adequate" does not only refer to the preliminary measure of the *adaequatio rei et intellectus*, as Heidegger had already clarified but also, and primarily, refer to the *synthetic* nature of this "precursory comprehension", i.e., to its *anticipating* in the beings' reception something that cannot be obtained from their mere empirical reality: compliance with a rule, the lending of oneself to conceptual articulation. Basically, this is the intervention of an intellectual element closely linked to the intuitive-sensible element (I shall return to this more analytically in Section 5). "The finitude

13 See Vygotsky, *Thinking and Speech*; Fernyhough, *The Voices Within*; Montani, "Sensibilità, immaginazione e linguaggio".
14 I shall, as a rule, adopt this, albeit partially unsatisfactory, expression to define the "other" from the linguistic universe in the formal sense: we might also say the "reference world" were this definition not responsible for some classical misunderstandings overshadowing the fact that language and the world codetermine each other. For the question of plasticity, see Malabou, *Before Tomorrow*, which presents a remarkable discussion of Kant's philosophy.
15 See Ingold, *Making*; Montani, "Techno-Aesthetics and Forms of the Imagination".
16 See Heidegger, *Bremen and Freiburg Lectures*.
17 Heidegger, *Kant and the Problem of Metaphysics*, 23.

of knowledge manifests an original and intrinsic dependence of thought on intuition or, conversely, a need for the latter to be determined by the former. The mutual dependence of these elements emphasizes the fact that their unity cannot be 'later' than the elements themselves but must be established 'earlier' in them and serve as their foundation."[18]

It is not difficult to reformulate Heidegger's interpretation of the transcendental imagination by linking it to the paleoanthropological frame repeatedly invoked here. The characteristic technical creativity of the *Homo* genus, clearly highlighted by the situation of material engagement, rests on a more original ability to "distance oneself" from the operational practice that is manifested as a synergy between listening and provocation and as a feeling in agreement with the affordances of the material – a positive *Stimmung*, as Kant says in the third *Critique* –[19] which is *also a way of reorganizing them and gathering them in a different design*, linked to the affordances that I have defined as supervenient. Basically, a receptive, and profoundly embodied, practice that also bears with it the instance of an, equally embodied, active articulation. Without leaving the example of working clay, we can imagine the agency of our *Homo faber* as a giving oneself over to the suggestions of the material, which is also a way of organizing them according to several potential *articulations* (any objects that emerge may, in fact, have very different forms).

Two paleontological findings will help me reinforce the legitimacy of the extension of Kant's paradigm and of its reading by Heidegger with the proposal, again, of suitable reformulations. The first concerns the crucial issue of transcendence; the second the, equally crucial, one that I have thus far and in a still approximate manner defined as "active articulation" and which was a prelude to the appearance of an articulated speech.

4.1 Two paleoanthropological exemplifications

To this end, a classic of modern paleontology by André Leroi-Gourhan (1993) provides an indication as precious as it is, generally speaking, overlooked by specialist literature, which continues nevertheless to acknowledge his undisputed authority.[20]

Granted that Leroi-Gourhan uses a time division and terminology that have been substantially reconfigured by many recent discoveries, the theoretical value of his fundamental indication is, to a large degree, disconnected from the importance that may be attached to its precise datability. The indication is as follows: in a period of time that, according to the author, dates from the Middle Paleolithic "a most important development" occurred in stone tools, consisting in the fact that a block originally used as the material from which to obtain an artifact – e.g., an amygdala or "two-sided" flint – was used to produce a certain number of flakes subsequently reworked to produce diverse utensils. This, writes Leroi-Gourhan, means that

> the tool function had shifted from the mass initially intended to constitute the tool to the flake derived from that mass. [...] We shall see later that this process is generally characteristic of the more developed industries. In other words, from being the tool itself the lump of stone has become a source of tools (as we shall see, an additional stage was to be introduced from the Upper Paleolithic onward). The blade or flake would then no longer constitute the tool but would be divided into sections providing the starting point for the making of the tool proper.[21]

The text speaks of a generic "shift" but the transformative process described by Leroi-Gourhan, and as acknowledged by Emilio Garroni in a major essay, could be credited with the nature of a true leap.[22] This was not, indeed, a simple development in the previous production protocols but a robust promotion of the

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18 Heidegger, *Kant and the Problem of Metaphysics*, 50.

19 See Kant, *Critique of the Power of Judgment*.

20 See Leroi-Gourhan, *Gesture and Speech*.

21 Ibid., 100.

22 See Garroni, *Ricognizione della semiotica*. The same leap on which numerous paleoanthropologists agree, based on much other convergent evidence (see in particular Tattersall, "Language Origins: An Evolutionary Framework"); Tattersall, *The World from Beginnings to 4000 BCE*.

reflexive trait of material engagement, that which along with Heidegger we have identified as the transcendence of Kantian imagination. The point to highlight is that from the very first a *reflexive* (and *recursive*, as we shall see better later) element is at work in the overall interaction of material engagement, an element capable of redirecting it along evolutional lines that in the right circumstances – such as certain key *exaptation* processes regarding the phonatory and acoustic apparatus –[23] are a prelude to the birth of an articulated and denotative speech. Indeed, in some ways, the operational protocol that obtains *numerous diverse tools* from a single piece of stone coincided exactly with an *articulation* of the world of practice – that is established by denotative semantics (I shall return to this soon).

It is in no way necessary to presume that this latter imaginative function, a direct precursor of language, for some reason avoids the emergence and coevolutionary process highlighted in particular by Malafouris. Indeed, over time, the imagination – and here I come to the second paleontological finding – reaches a gradual self-awareness of its articulatory function following a long succession of *externalized experiences*. This is seen clearly in the early practices of *intentional drawing* such as that found in the Blombos Cave and dating from approximately 80,000 years ago (but even older examples exist). There, an imagination at work via a hand, tracing lines or incising dots, was experimenting with itself in terms of potential protowriting and protolanguage, a practice subsequently undertaken in the production of a true mnemonic and on the basis of which it was also possible to implement the, equally externalized, formation of the operational concept of the number.[24]

5 Communicative–expressive language and denotative phonetic articulation

The feedback produced by the externalization processes therefore seems crucial to preparing the conditions for the emergence of an articulated speech with denotative semantics. We must dwell analytically on this because it was an event that was to provide *crucial feedback* to the imagination and its evolutional destiny (with special reference to the *history* of its most specific products: images, as we shall see in the conclusions).

Although Kant's critical philosophy never directly thematized the issue of language, the chapter in the *Critique of Pure Reason* on which Heidegger's interpretation focuses in particular contains a precise indication to this regard. The chapter in question is that devoted to the "Schematism of pure concepts of understanding".[25] What is a "schema"? It is a procedure of the imagination by which, writes Kant, concepts are guaranteed "a relation to objects and thus with [a] significance (*Bedeutung*: a denotation)".[26] Kant refers here to the "pure concepts", i.e., the 12 categories, but the argument also applies to the empirical concepts. For example, to the concept of "dog", mentioned a few pages earlier. That being the case, the schema must be seen as principally responsible for the synthetic process by which the sensible reception of the given beings is simultaneous with their integration with an intellectual element (a concept, a rule). This synthetic process must, in turn, be better understood as the conferral of a *Bedeutung* (a significance because a denotation or an object reference) to the concepts of the understanding, which in its absence would be empty.[27] In other words, the schematism of the (pure and empirical) concepts of the intellect – i.e., the most original and representative work of the transcendental imagination is because the

23 For this point, see Lieberman, *Toward an Evolutionary Biology of Language*; Mithen, *Singing Neanderthals*; Tattersall, *The World from Beginnings to 4000 BCE*; Cox, *Now You're Talking*.

24 For this discussion, see Antinucci, *Parola e immagine*; D'Errico and Colagè, "Cultural Exaptation and Cultural Neural Reuse". See also Malafouris, *How Things*, 106–16.

25 Kant, *Pure Reason*, 271 et seq.

26 Ibid., 276.

27 For an original discussion of this point, see Garroni, *Immagine, Linguaggio, Figura*.

"common root" of sensibility and understanding – must be seen as *fundamental semantics* and, more specifically, as the emergence of a process of *articulability* of the world of practice based on very general and stable partitions (the pure concepts or categories) but also very differentiated and potentially infinite ones (empirical concepts). The *reciprocity* of the process must once again be reiterated; it is not a matter of establishing some kind of precedence – of concepts over things or things over concepts – but of emphasizing the *unitary movement* via which the two elements codeterminate each other.[28]

Fundamental semantics, however, *are not yet* a language and even less so speech. For a language and speech to emerge *the moment of externalization becomes crucial* and, equally, responsible for totally unpredictable emergences based on the previous conditions. Having reached this threshold, Kant's critical thought can no longer be of assistance to us and we must take our leave of it without, however, renouncing its qualifying instances (which will be reproposed, farther on, from a historical perspective).

At this point, we have to explore, and must do so via conjecture, the process by which articulated speech, that is to say a *technology* with original properties not analytically obtainable from fundamental semantics, managed to emerge from fundamental semantics managed by the schematism of the imagination and the forms of material engagement which are linked to them in operational and perceptual–motor terms.

We must presume that the evolution of the *Homo* genus would have been very different had the general conditions of fundamental semantics not been externalized in an apparatus furnished with the properties of articulated speech (and I shall discuss some of them now). The intuitions of Ferdinand de Saussure remain key if we are to place this point on a properly theoretical plane, particularly his fundamental theory on language (*langue*) as *form* and not substance.[29] Saussure wanted to highlight two aspects. The first is that a language actively classifies the world of practice, in the sense that its units establish themselves in a grid that superimposes itself on the material of the experience and organizes it. This is what I linked above to the activity of articulation. The second is the *systematic* nature of this process, i.e., the fact that the language consists, above all, in a system of differences. The elements of the language, in other words, are identifiable on the basis of their reciprocal differences and not that of substantial contents. In the English-language system, for example, the /dog/ unit is identified solely by virtue of the fact that it cannot be superimposed on other units such as /bog/ or /fog/ or /log/ etc. and not by virtue of substantial motivations.

The concept of language as form, therefore, radically incapacitates the concepts that see language as a nomenclature of names attributed by convention to objects already present in the world-environment. Instead, and as I have repeatedly stressed, a reciprocal determination process is at play.

However, if it is not a relationship established by convention, what is the link between the formal and systematic conditions of the language and the order of the meanings? This question is answered by the basic concept of the *arbitrariness* of the linguistic sign.

This sometimes-misunderstood point was very clearly highlighted by Emile Benveniste in a short 1939 essay.[30] In an interpretation partially endorsed by Saussure himself,[31] arbitrariness concerns the relationship between the signifier and the signified. According to this understanding of arbitrariness, there is no substantial relationship between the sequence of sounds /d-o-g/ and "the idea of dog" (or the mental picture or concept: the publishers of the *Course* waver on this point). Benveniste radically disputes this conventionalist interpretation of arbitrariness. He points out that there is a necessary relationship between the signifier /dog/ and it is signified in the English language, one just as necessary as the relationship established by the signifier /*chien*/ and the signified of this word in the French language. Arbitrariness indicates a totally different condition which is extremely clear to Saussure who illustrates it in several ways, including famously the "cutting" of a sheet of paper. The relationship between the two

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28 This is, without doubt, the most daring, and the most solid, epistemological aspect of Kant's critical philosophy.
29 See Saussure, *Course in General Linguistics*.
30 Benveniste, "The Nature of the Linguistic Sign".
31 It must not be forgotten that the edition of his *Course* published in 1916 was based on notes taken by Saussure's students.

elements, says Saussure, is like that between the *recto* and *verso* of a sheet of paper: if I cut the *recto* I am necessarily, at the same time and in the same way, also cutting the *verso*.

In other words, arbitrariness does not concern the relationship between signifier and signified, which is necessary in every single linguistic system (i.e., it is necessary because internal to the system: played on the differences and not the contents); it regards the relationship between the unit constituted by the sign (signifier + signified) and the reference object (in this case that hairy quadruped that barks and wags its tail). Arbitrariness therefore regards the *denotative performance* carried out by language, which does not correspond (as referentialism and conventionalism would like) to the assignment of a name to the elements of a semantic matter already articulated but with an active articulation (i.e., in Kantian terms, an active schematization).

There is, therefore, no material motivation that forces us to shape the semantic matter (the "world of practice") in that particular way and not in another. What in one language I define with just one sign unit – e.g., /*carne*/ in Italian – may require two in another language, as occurs in English where I shall call it *meat* or *flesh* depending on whether or not it is edible. In other words, languages shape the world of practice on the basis of partitions that are often superimposable but just as often are not.[32]

Therefore, the fact that the linguistic sign is arbitrary means that language exercises a *formative action* on the semantic matter. This action we might say, using the terminology adopted above, *detects* salient affordances in the same measure in which it *solicits* and *provokes* supervenient ones. And that, actually, it seems destined to be extraordinarily active in its execution of this second function. In this sense, precisely because it does not tie itself to a substantial motivation, nothing stops a language from introducing more refined articulations into the continuum of the experience and these will, usually, be received into the system of the *langue* because it is only identifiable in differential and not substantial terms. The key point here is this: these virtually endless reorganization effects can only be obtained, thanks to the richness of the articulatory apparatus externalized in the phonation of *Homo sapiens* (and seemingly it is alone). They are not guaranteed by what I have called fundamental semantics managed by the imagination; they appear by virtue of their externalization – which emerges by total chance and is often linked to exaptation processes.

To recapitulate, fundamental semantics, of which the schematism of the imagination is the organ, is indeed the enabling condition of linguistic semantics, but this is not an analytical derivation because the externalization process by which it is manifested introduces new elements that substantially alter the frame.

5.1 Denotation, reflexiveness and recursiveness

Some aspects of this frame must be emphasized. The first consists in the fact that the circuit of feedback between interior and exterior (between the schematism of the imagination and the phonetically articulated language) must, as a priority, be linked to *denotative semantics*. Its sphere of practice, in other words, is that "aboutness" that had *already* appeared to some degree in material engagement but which the invention of articulated speech took to a level of *powerful institutionalization*. This is not to say that the communication activity peculiar to the *Homo* genus had not already, and probably for many hundreds of thousands of years, been experimenting with forms of expression (the communication – gestural, phonic or mimic – of subjective emotions but also of approval, threat, encouragement, etc.)[33] and community ones (practicing several forms of joint attention and of perceptual–motor training, etc.),[34] both, of course,

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32 See the classic discussion of this point in Hjelmslev, *Prolegomena to a Theory of Language*.

33 Mithen, *The Singing Neanderthals*, defines these forms of communication as *Hommmmm* (Holistic multimodal manipulative mimic musical) language.

34 See Tomasello, *Origins of Human Communication*.

also decisive for the effective exercise of denotative semantics. It does say that here we see a significant *leap* in many ways similar and perhaps evolutionarily linked to that highlighted by Leroi-Gourhan with regard to stone manufacture. A distancing from the immediacy of the operational engagement that extends to the ability to guarantee the semantic performance even in the absence of the designated object, i.e., to transfer the function of re-presenting something in its absence, typically performed by the imagination, to the linguistic form in a strongly boosted manner.

The second aspect concerns the *reorganization* of the work of the imagination following the advent of articulated speech. It seems clear that, from that moment on, the imagination starts to exercise the key function of providing the linguistic form with the rooting – embodied and invested in perceptual–motor practices – required to activate and feed fundamental semantics. Whereas it is the formativeness of linguistic articulation that ever more vigorously – and in some ways spectacularly – takes on the directrix of the imaginative work that I previously linked to the solicitation (or provocation) of supervenient affordances.

There is, finally, a third aspect of the imagination–language relationship that must be mentioned. I am referring to the phenomenon of *recursiveness* – i.e., a (reflexive) ability to incorporate a practice *within* another practice – which is already present in the sphere of action attributable to the reflexivity of the imagination. Some authors[35] have pointed out that recursiveness must have emerged in human practice in operational terms – or rather meta-operational ones –[36] before then flowing significantly into the first forms of language. For his part, the great Russian psychologist Vygotsky had already pointed out that, when learning new skills, it is as if the imagination splits into two and incorporates its innovative performance into a reflecting comprehension *while* this is happening.[37] But, if we observe recursiveness from the specific angle I am discussing here, i.e., as the assertion of denotative semantics, it becomes clear that the evolutionarily successful form of externalization, i.e., phonic articulation, has in this case too involved original and powerful feedback.

Not only did Charles S. Peirce develop this point most clearly but he did so, it should be stressed, on the basis of an explicit rethinking of Kant's philosophy. The concept of "interpretation", which I shall present here in brief, first appeared in all its epistemological significance in Peirce, in a short 1867 text reworking Kant's list of categories.[38] The semiotic–linguistic reformulation subsequently proposed by Peirce clarifies the centrality of the recursive element in the epistemological schema he was using to define the essence of the sign. Peirce provided several versions of this but the clearest is always the following:

> A Sign, or Representamen, is a First which stands in such a genuine triadic relation to a Second, called its Object, as to be capable of determining a Third, called its Interpretant, to assume the same triadic relation to its Object in which it stands itself to the same Object. The triadic relation is genuine, that is its three members are bound together by it in a way that does not consist in any complexus of dyadic relations. That is the reason that the Interpretant, or Third, cannot stand in a mere dyadic relation to the Object, but must stand in such a relation to it as the Representamen itself does.[39]

The thought thus expressed by Peirce can be reformulated as follows: a sign, or representamen, refers to an object (i.e., in Saussure's terms to a "cut" in the material of experience) in keeping with a certain profile (ground) such that another sign (interpretant) is *necessarily* required for the profile itself to be clarified and "more developed" (as the author says in another passage). The original semiotic relationship, therefore, is not biunivocal (sign–object) but necessarily triadic (sign–object–interpretant). However, this triadic nature, in turn, must be more precisely seen as a structural model of recursiveness. To function as such, the sign–object relationship *must* be capable of being assumed within a recursive

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35 See, for example, Corballis, *The Recursive Mind*; Everett, *How Language began*.
36 See Garroni, *Ricognizione della semiotica*; Garroni, *Immagine, Linguaggio, Figura*.
37 See Vygotsky, *Thinking and Speech*.
38 See Peirce, "On a New List of Categories".
39 Peirce, "On a New List of Categories", 273.

relationship. In short, we do not speak of "things" but of how signs refer to things. The unparalleled advantage of articulated speech consists in its being the only semiotic system able, *in principle*, to speak of itself, i.e., to assume its significations as the object of the semiosis. Benveniste conclusively clarified this point of capital importance by distinguishing between "interpreting systems" and "interpreted systems", and pointing out that only articulated speech possesses both characteristics, by virtue of its structural recursiveness.[40]

This situation has numerous, influential and little-studied consequences. In the conclusions of this piece, I shall highlight just one, which concerns *the configuration of a historically significant relationship* between the two principal products of the imagination and language: image and word, respectively.

6 Conclusions. Image and word: a relationship that is historicized

The specific meaning this article attributes to the relationship between image and word has been achieved through a long discussion. I would like to summarize the main steps of this discussion. In Sections 1 and 2, I highlighted the epistemological importance of imagination in Kant's critical philosophy, referring to Heidegger's famous interpretation. I also proposed to connect critical philosophy with the approach practiced by paleoanthropology and cognitive archeology and, in particular, with the paradigm of material engagement. Then (in Sections 3 and 3.1) I underlined the close connection of externalization and internalization, which is at work in this paradigm. In fact, a series of reciprocal feedbacks is established between these two processes. These feedbacks continuously modify the practical and cognitive behavior of the human being and his relationship with the technologies to which he relies. I also clarified that important distinctions must be introduced in the characteristic interactivity of material engagement. From this point of view, it is interesting (Sections 4 and 5) to reconsider the functioning of material engagement by highlighting those elements – reflexivity, objectification, recursiveness – that have created the conditions of possibility for the emergence of articulated language. Of course, this emergence has no teleological meaning, being rather the result of random events and the effects of exaptation (Section 6). The fact so occurred, however, ended up changing the order of the technical performance of imagination (Section 6.1).

To end, if we return to Kant's idea of a "common root" of sensitivity and intellect, we are permitted to say that the dissociation of the two stems of knowledge can be helpfully interpreted via a historical–evolutionary scan. I mean that *after* the invention of an articulated speech furnished with denotative semantics and structural recursiveness, the relationship between imagination and language introduces an *original story* – the story of the relationship between image and word – which can be rethought following the thread developed herein.

This version of critical thinking can be attributed neither to Kant nor even to Heidegger. The latter, however, identified a precise development of this idea in Friedrich Schiller's philosophical aesthetics, which he correctly interpreted as a "historicization" of the transcendental philosophy.[41] At any rate, the Kantian thesis of a schematism of the imagination provides us with a reliable theoretical guiding thread for the purpose of a profitable critical approach to the relationship between imagination and language and, subordinately, between image and word.

A chapter of this story remains to be fully written – that which, starting from the last 30 years, concerns the advent of digital technologies wherein a profound renegotiation is clearly underway within

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40 Benveniste, *Problèmes de linguistique générale, 2*. See also Virno, *When the Word becomes Flesh*.
41 For this point see Heidegger, *Nietzsche*; Montani, "Schiller. Il 'politico' e lo 'storico' ai confini dell'estetica".

the sphere of the word–image relationship. I shall merely highlight, to conclude, a single phenomenon that is totally underestimated as concerns its philosophical and epistemological significance.

I refer, in particular, to the consolidation of a new form of expression that deserves our attention amid the many resources of the Web, for it consists in the coordinated use of word and image in the composition of complex texts. This compositional structure is far from being new. Nor is it a technological phenomenon available only to specialized research in the field of media studies (Gitelman 2014).[42] What is really new in this phenomenon are its conditions of implementation, for they exploit the possibility of being spread on a global scale. Thus, they make it similar to a new writing system which could be called extended writing (EW). Its diffusion is granted by both infrastructures of the Web such as social networks and the specific productive support of digital technologies. This support is directly necessary to the realization of images inserted in the text but also, and primarily, to gain access to the huge iconic archive of the Web, as well as to different forms of reuse and re-montage of the various types of images the Web contains. The feature we, as philosophers, are interested in is the following: the technical phenomenon we are talking about looks like a real form of writing present, as such, in learning practices and internalization processes analogous to those concerning articulated language and phonetic writing. From this point of view, it must be clear that, rather than being a set of more or less innovative applications, EW is a semiotic device. As a semiotic device, it affects the overall organization of the cognitive and pragmatic behavior of those who use it, to the same extent that its roots lie in the basic mechanism of the symbolic experience of humankind: the relationship between imagination and language.

Here are some examples, which I present on a scale of increasing complexity. The simplest form of word–image montage is perhaps constituted by the inscriptions of several types of "emojis" in our texts. They are expressive "faces", the repertoire of which has recently multiplied. Nonetheless, they have retained their basic semiotic status, namely, their twofold, both iconic and scriptural, nature. Indeed, a key aspect must immediately be highlighted: notoriously, emojis are but the iconic and analogical development of "emoticons" which are composed using combinations of certain graphic characters – e.g., colon and end parenthesis /:)/ to designate happiness or satisfaction. This development vividly expresses a genealogy that will be investigated later, according to its different profiles. However, this genealogy already allows us to provide the argument with immediate support. We should speak, in fact, of writing integrated by images or other elements rather than of images to which some writing is added. In other words, it is writing with its specific resources (linearity, discreteness, rules of concatenation, etc.) that functions as a constructive principle of the text. Or rather, as will be better clarified soon, images implement, or re-qualify their aptitude to create discourse. A field of tensions appears here. On the one hand, the increasing standardization of the construction procedures and formal repertoires available to users tends to keep EW within the boundaries of a barely combinatorial, albeit rich and flexible, game. On the other hand, the specific resources of the scriptural element strive powerfully to orient this combinatorial game toward stages of greater complexity, just as happens in *writing*, narrowly construed. The images so created lay claim to reading rather than contemplation and to the fragmented and sequenced temporality of montage, rather than that of vision, based on simultaneity and unity. The reorganization of the expressive systems in use among the abovementioned human communities refers precisely to this point: in EW, the potentialities linked to the discreteness and linearization typical of the Gutenberg printing press are extended to images, with their aptitude to be constituted in discursive processes.[43] The great film director and theorist Sergei M. Eisenstein was thinking of something like this when, in the 1920s, he spoke of "intellectual montage".[44]

The point that requires specific philosophical attention is therefore the following: in the composition of texts shared on the Web, new forms of expression and discursive techniques are emerging in which the iconic aspect, such as "storytelling by images", is perceived *in an immediate, non-reflective way* as an

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42 See, for example, Gitelman, *Paper Knowledge*.

43 See McLuhan, *The Gutenberg Galaxy*; Ong, *Orality and Literacy*; Antinucci, *Parola e immagine*.

44 See Eisenstein, *Towards a Theory of Montage*; Montani, *Introduzione*.

extension of the scriptural element, a new high skill of rearranging the haptic performances of the fingertips.[45] More generally, the sensorimotor dimension of our imagination emerges along with these practices.

As I have already pointed out, there is a conflict between the standardized protocols automatically processed by the various providers of EW and the processing, identifying and responsible use of the "raw" semiotic materials available on the Web. However, in principle, this is a conflict no different from that regarding internalization processes in general and, moreover, one which avails of salient political connotations. *It might indeed be one of the ways in which the true political struggle is conducted in a near future.*

Ultimately, we must beware of interpreting the still approximate and simplified nature of EW products as if they constituted a drastic impoverishment of the possibilities of expression deployed by the two traditions it stems from, and that it coordinates – iconic communication and linear writing (or, more originally, imagination and language). Instead, it must be seen as a new and important chapter in the relationship between image and word that has considerable potential linked to its innovative empowerment which envisages internalization, individuation and specific repercussions in the ethical and political realms.

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45 See Flusser, *Ins Universum der technischen Bilder*; Flusser, *Kommunikologie. Weiter Denken*; Flusser, *Does Writing Have a Future?*; Bruner et al., "Cognitive Archeology".

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