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Embodied agentive habits: between sedimentation and ongoing ground

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Abstract: This paper argues that human signification is governed by “agentive systems,” inspired by an extended framework that combines the Practical Logic of Cognitive Systems and Peircean semiotics. An agentive system encompasses both the efficient anticipation of resource utilization and the use of actual available resources, including bodily capacities in the form of embodied habits. These resources are allocated based on agendas (goals) pursued by human agents in their interactions with the environment. In this context, signification involves the meaning of actions embedded within their agentive system, encompassing the agent performing the actions, the action’s goal or agenda, and the available resources, whether bodily (skills, abilities, capacities) or non-bodily (objects, signs). After presenting the general framework in which the concept of an agentive system is approached, I develop a proposal drawing on insights from Göran Sonesson’s reflections on the importance of sedimentation and Lifeworld for semiotics. This proposal highlights how the acquisition of embodied habits facilitates and promotes the significance of cultural products, while their deployment allows for the emergence of situated signification.

Keywords: habits; significance; signification; agency; Sonesson

1 Introduction

One can argue that one of the central problems of semiotics is the problem of “signification.” Depending on the approach selected – whether from classical or contemporary structuralism, classical or contemporary Peirceanism, culturalist, or cognitive approaches, among others – the problem is framed and understood differently, leading to various explanations. This paper aims to present an approach that explicates signification, understood as the meaning imbued in actual action.

The next section introduces how this approach can be constructed by integrating two frameworks: Peirce’s semeiotics, particularly as interpreted by Thomas Short (2007), and the Practical Logic of Cognitive Systems (PLCS) advanced by Dov Gabbay

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and John Woods (2003, 2005a, 2005b; Woods 2014). This new approach is enriched with empirical findings from the cognitive sciences and theoretical insights from the phenomenological tradition.

The third section addresses how, within the presented “agentive framework,” the capacity for signification (and its cognates: meaning, significance, among others) is acquired. The role of “habits” is central here, incorporating Göran Sonesson’s (2016a, 2016b) interpretation of the importance of “sedimentation” and “Lifeworlds” in Husserl’s generative phenomenology.

The fourth section focuses on how this capacity is deployed. It explores the phenomenological issue of the “sphere of attention” (Arvidson 2006), considering findings in the cognitive sciences, particularly related to executive functions and a posit of the PLCS, to explicate signification as an ongoing process. A conjecture about this process is advanced, and a couple of examples are used to test the proposal’s scope.

The final section draws conclusions about the advanced approach and sketches directions for future research.

2 How to build an agentive system

2.1 Thomas Short’s significance and Peirce’s semeiotics

Let’s begin with the Peircean side. I will understand “signification” as meaning insofar as it is actually generated. In this sense, for instance, a thought, feeling, or motor act, insofar as they are actually thought, felt, or performed, have “signification.” ‘Signification’ can thus be related to Peirce’s “Dynamic Interpretant” (MS 637) and to “semiosis” if understood as a “sign-in-action.” In contrast, “significance” – following Short (2007) – is the correction-criterion for signification. For a criterion to be such, the standard must function as a “purpose,” and a purpose is a “Type” that “comprises varieties.” Among these varieties, some are better than others; and by contrasting a given signification with those varieties, it can be valued as correct/incorrect, true/false, better/worse, etc. Short correlates this “significance” with Peirce’s “Immediate Interpretant” (2007: 150) and understands it as “grounded interpretability.”¹ “Interpretability” of something is the type of response for someone and relative to a certain purpose, while “grounded” implies that this “response” has

¹ This Grounded Interpretability, according to Short, answers for the four features he finds in Peirce’s sign: X is a sign S of an object O if: (a) X ‘stands for’ O according to some respect ‘A’ (and not another), (b) for a possible response R, (c) with respect to a purpose P, (d) for a response that would have a reach in relation to obtaining O.

some kind of warrant or ‘ground’ in achieving the purpose. The Ground is what makes that “interpretability” sound or reliable. Short’s proposal is that all signs have significance. I follow him in this with a modification and amplification: Short uses “interpretability,” maybe as a way to retain Peirce’s “interpretant,” but I prefer “responsivity” because it can encompass any kind of response, either affective, motor, or imaginative; automatic or deliberated; slow or fast, etc.; even when the ultimate purpose is to produce or transform something (and not to ‘interpret’ it), like in cooking or writing. Thus, for present purposes *significance* will be understood as “grounded responsivity.” “Responsivity” is constructed in analogy to “communicability” or ‘interpretability’ where the suffix “-bility” means possibility, in contrast to “response,” “communication,” and “interpretation,” which are more aligned with actual action or effect. Thus, “responsivity” consists in possible response(s), which, besides, are “standardized” in the sense that some possible responses are better than others. The “Ground” in the significance is what warrants that the response would be a “good” response; that is, that it contributes to the accomplishment of the purpose. Consider the cap of a bottle. The appropriate response to uncapping the bottle involves pressing down on the cap and turning it typically counterclockwise until it is released, so that the bottle’s contents become available for pouring. Capping the bottle involves performing the opposite action. But why is this response adequate for uncapping the bottle? Because the grooves between the cap and the bottle are arranged in such a way that other movements will not succeed (except for the option of breaking the bottle, which is also possible). In this sense, there are ontological issues at play here: the morphodynamics of the cap and the bottle mean that when pressure is applied, certain causal relationships are triggered. In this regard, the body (the phenomenally lived-body) is also a body among other bodies, subject to constraints and causal relationships, and our motor actions are causal forces. This is evident in that if we are not strong enough, we might not be able to open the bottle with our hands and might need to resort to another response (such as using a tool or asking someone else to do it for us). I call this “ground” related to morphodynamics, which involves causal relationships, the “ontological ground.” On the one hand, it involves the items acted upon (usually objects), and on the other, the body of the person acting on those objects. Additionally, there is another foundational aspect: the purpose of the significance must be compatible with the objectives of the people who are supposed to carry it out. For example, people might buy their young children functional scale model cars or motorcycles, ergonomically appropriate for their bodies (and therefore with considerations around the “ontological ground”), but it is unlikely they would buy them a scale model flamethrower due to the undesirable and deleterious effects its use might have. The compatibility of the purposes of

significance with the objectives of its users is what I call “Agendive Ground” (the selection of this term will be clarified below).²

Returning to Short’s original proposal, however, it seems that not everything in its direct use is used as a sign, that is, does not seem to “represent” something else.³ For example, when I use a mug to pour, transport, and drink coffee, the coffee poured, transported, and drunk does not “represent” more coffee. In general, in the present proposal, for something to become a sign of something else requires – at least – a dual significance: On the one hand, that which allows the recognition of the thing as a sign (of something), and on the other, that which allows the recognition of the represented thing. For instance, if the mug makes me think of the person who gave it to me, I use the mug as a sign, and there are two significances: that of the mug and that of the person. The role of the sign’s significance is to give access to the represented thing’s significance, in this case, access to the significance of the person who gave it to me. A similar claim is addressed by Sonesson (2016a) when he says that in signs there is “indirect intentionality.” The contrast with Sonesson’s view can be established more strictly by considering his understanding of what a sign is. In Sonesson and Lenninger (2015), we find the following characteristic of a sign:

- a. it contains (a least) two parts (expression and content) and is as a whole relatively independent of that for which it stands (the referent);
- b. these parts are differentiated, from the point of view of the subjects involved in the semiotic process, even though they may not be so objectively, i.e., in the common sense Lifeworld (except as signs forming part of that Lifeworld);
- c. there is a double asymmetry between the two parts, because one part, expression, is more directly experienced than the other;
- d. and because the other part, content, is more in focus than the other;
- e. the sign itself is subjectively differentiated from the referent, and the referent is more indirectly known than any part of the sign (Sonesson and Lenninger 2015: 193).

In the present proposal, the two significances are articulated in such a way that the first (supposedly) grants access to the second, which correlates with Sonesson and Lenninger’s points b, c, and d. Typically, the access from the first to the second is warranted in some manner: We usually say that a flower picture “represents” the flower because of its similarity to it. An animal footprint “represents” the animal

2 In plainer, although imprecise terms, “Grounded Responsivity” for direct use involves four aspects related to four questions: How: “responsivity”; What for: “Agendive ground”; For whom: “Bodily ontological ground”; What: “Objectual ontological ground.”

3 In fairness, insofar as Short’s effort is to clarify Peirce’s semeiotics, and considering that for Peirce “all thought is in signs” and everything can become a sign, it is understandable that Short’s concept of significance involves “representation” as one of its definitional components.

because of the causal relationship between them. An engagement ring represents being promised in marriage because social conventions stipulate it as such. These three examples show that in the case of signs, the articulation of the first with the second significance is also “grounded,” which is referred to here as “Representational ground.” The examples respectively present the traditional trichotomy of icons, indices, and symbols. Now, a “Representational Ground” does not imply an ontological commitment (in the Quinean sense) to what is represented. That is, the ontological status of the object of the accessed significance (in traditional terms, the “referent”) can be real, unreal, realizable, fictitious, etc.; this relates to point e., although in the case of it being real, it does not always seem to be the case that the “referent is more indirectly known than any part of the sign”: It is possible that I know John better because he is my friend and not because he is an architect, although I can use one of his buildings as a sign that this is his profession. Thus, perhaps it is in relation to point a. where the greatest divergence in relation to what a sign is can be found, given that “expression” and “content” are not usually associated with ontological or teleological reflections. Besides, the second significance is not always accessed through a “representation” relation in the previous sense. For instance, in Barthes’ concepts of “denotation” and “connotation,” the second relatum has an ideological character (Barthes 1972 [1957]). There are other aspects in which Sonesson’s proposal and the present one can be compared in relation to their understanding of what a sign is, particularly its historic and socio-cultural aspect. I will return to that in Section 3.

A crucial additional point made by Short that should be retained is his assertion that every use presupposes the purpose of that use. This implies at least two intrinsically intertwined things: First, every signification presupposes a certain significance. Second, it is not part of the “possibility conditions” for signification that it always fulfills the significance standards, which explains why some results can be considered mistakes, errors, misapprehensions, misunderstandings, misinterpretations, etc. There cannot be a complete explanation of what “interpretation” is without an explanation of what “misinterpretation” is (the same can be argued in relation to “production,” “communication,” or anything that can be done with cultural products). An item’s significance establishes a set of (either subjective or intersubjective) standards for recognizing its possible production, implementation, distribution, reception, use, interpretation, etc. In a sense, cultural (intersubjective) products – places, objects, signs, social activities, social roles, etc. – are imbued with significance. In contrast, in signification, we act with/on those cultural products, and the actions and their effects are evaluated as accurate/inaccurate, better or worse, etc., in relation to the significance’s standards.

2.2 The practical logic of cognitive systems

The second source for the construction of this agentic framework is the Practical Logic of Cognitive Systems (PLCS; Gabbay and Woods 2003, 2005a), which is part of the so-called “practical turn” in logic at the beginning of the twenty-first century. In this “practical” sense, Gabbay and Woods are interested in studying the way people solve problems with their limited resources in real time. According to Woods,

An ecology is a dynamic system of interdependencies between organisms and environments. An economy is an ecology for the production and distribution of wealth. A cognitive economy is an ecology for the production and distribution of knowledge. Economies of both kinds are subject to some quite general constraints. They define circumstances in whose absence the desired product is not produced or not as abundantly as producers would have wished. (Woods 2014: 184)

Woods is a philosopher and thus he is interested in “knowledge” rather than “meaning” in general, which concerns us here more broadly. However, I see no reason to limit the proposal to knowledge and would like to expand its scope to be applicable to meaning in general. What I want to highlight now is that in this approach, problem-solving takes into account what can be described as a “principle of cognitive economy”: in general, when solving problems, people will try to use the least amount of resources (efficiency) to actually solve them (effectiveness). Adapting this to a naturalized semiotic environment, it means that actual generation of meaning (what above has been called “signification”) employs resources. This is what will be clarified in what follows.

According to the PLCS, cognitive economies are composed of cognitive systems. A cognitive system is defined as “a triple X, R, A , of a cognitive agent X , cognitive resources R , and a cognitive agenda A executed in real time” (Gabbay and Woods 2005a: 10). Gabbay and Woods originally propose that for such cognitive agendas, three types of resources are especially important: information, time, and computational capacity (Gabbay and Woods 2005a: 11). Some clarifications and modifications are necessary for applying the PLCS proposal to a semiotic realm. The first is that both the *agenda* and the *agent* need to be explicated.

2.2.1 Agendas

In the case of an “agenda,” we can first appeal to Peirce’s concept of “purpose” as explored by Short (2007) and partially presented above. An agenda is something an agent pursues and imposes valuation conditions upon (it is in this sense that “agendive” was used above). For now, I propose that an agenda is composed of three

parameters (agenda type, agenda resources, and agenda timeframe), each intersected by one or several valuation grids.

First, the *agenda type* refers to the type of result aimed at, whether achievable or not (sometimes people aspire to solve unsolvable problems, such as squaring the circle). Some agendas are interventive, while others are more comprehensive. Typically, the former includes the ‘production’ of things (as when someone is preparing food), where something that does not exist (the prepared food) is created from certain resources (raw materials, recipe information, cooking abilities). Comprehensive agendas typically include interpretive activities. Now, insofar as some goals can have different optimal results, some comprehensive agendas can have multiple good significations, even if divergent (as in art criticism), whereas in others, convergence is a mark of alignment with currently established standards (as in mathematics and some empirical sciences). Besides interventive and comprehensive agendas as general – and not necessarily mutually exclusive – types, a third type can be recognized: the esthetic type. While interventive agendas try to make a difference (e.g., by producing something), and comprehensive agendas try to make something intelligible (e.g., in hypothesis advancement), with the esthetic type, bodily differences are expected to occur. This includes all kinds of bodily experiences from the taste of food to cognitive entertainment, from contemplative art to football spectacles or music concerts, etc.

Second, *agenda resources*. In the present paper, I am interested in human signification and will thus restrict discussion to human resources, although nothing prevents the study of other animals using this approach. I will divide the resources into bodily and non-bodily. “Bodily resources” include skills and capacities, which encompass ‘cognitive’ resources in the traditional sense, such as long-term memory, language, perception, and executive functions (cf. below). More broadly, they also include emotions and motor skills, and also, the inner sense of time. In general, “bodily resources” would encompass any bodily response an agent can have, from the more automatic and basic (either biologically programmed or learned) to the more controlled, reflective, and deliberative. On the other hand, “non-bodily resources” are the things that can be used, interpreted, or consumed to fulfill an agenda; these include spaces, objects, and signs. In a reductive but clear fashion, the limit between bodily and non-bodily resources is the skin. For most agendas, bodily resources utilize non-bodily resources.

Third, the *agenda timeframe* consists of the temporal window within which the accomplishment of the agenda is relevant for the agent.

The valuation grids are the standards for evaluating the adequacy of the above three parameters. Two important points should be noted: First, most of these standards are learned in socio-historical contexts (from language use to good manners, from commercial transactions to participation in sports, from tool use to

institutional exchanges, etc.). Second, people can align or misalign with those standards. In this sense, the effective and deliberated use of something for another purpose (say a pen used as a weapon, in a John Wick style), means that, in a strict sense, agendas insofar as they are relative to real agents, do not have “significance,” which is attributed rather to cultural products.

A final but important comment regarding agendas: the conditions that establish the fulfillment of an agenda determine its “closure.” However, it is important to establish that an agenda is “closed” not because the appropriate actions are taken or the correct material resources are used, but because of the *effects* derived from those actions and reactions. For example, in football (soccer), if a player kicks the ball towards the goal with the intention of scoring, her action of kicking the ball (not all of her movements) ends when the ball leaves contact with her foot, but this does not yet constitute a goal. The effect of kicking the ball still has to contend with factors such as the goalkeeper’s position, the wind speed, the effect and speed at which the ball travels, etc. A goal is only scored when the ball crosses the goal line (provided that other prior conditions are also met, such as the ball being kicked at a valid moment and not being offside, for example). Note, moreover, that a goal can occur even without the player’s intention: even if she kicks without intending to score and the ball crosses the line, it is a goal. This happens because the conditions of significance have been met: moreover, it is an error and an own goal where certain unanticipated effects have occurred. But think again about the case of the bottle and the cap. Suppose the agenda is to uncap the bottle, and you make the prescribed movements according to the significance of “uncapping,” but the grooves between the cap and the bottle are defective, causing the cap to spin indefinitely, thus not uncapping the bottle. Here, the actions are appropriate, but the expected effects do not occur because there is a defect in the object preventing the effects established by the significance from being achieved, the effect of which, in turn, is that the agenda remains “open.” In this way, agendas (and significances) establish the standards under which they can have closure. But it is the real effects of real causal relationships (and remember that bodily responses enter into causal relationships like other bodies) that will be evaluated in relation to such conditions of closure, and that count as having closed or not closed such agendas.

2.2.2 Agents

An agent can be any living, active entity, but insofar as, in the following part, I will tie the proposal to Sedimentation and the *Lebenswelt* of the phenomenological tradition, I will concentrate on human agents only. Agents have “agency,” and I believe that *agency* is one of the most – if not, the most – important notion for clarifying what

signification and significance are. There are many definitions of agency, but in a first and primary sense, *agency* is capacity for acting. I would like to add three aspects to this. First, it is a bodily capacity. That is, agency is the capacity for acting of living things, more notably, human beings (which is not to deny at all that other animals have some kind of agency). Second, agency, insofar as it is attributable to organic living things, involves behavioral and mental dimensions. Recently, Michael Tomasello (2022) has advanced a hypothesis about the evolution of human agency. The final paragraph of his book reads:

Every scientific discipline begins with a proper domain, a first principle, as Aristotle would call it. In biology, that proper domain or first principle is life: physical substances organized in particular ways to perform particular organismic functions. In psychology, depending on one's theoretical predilections, that proper domain or first principle might be either behavior or mentality. But my preferred candidate would be agency, precisely because agency is the organizational framework within which both behavioral and mental processes operate. In the theoretical model I am proposing, agency can take a specifiable range of forms, which vary along a specifiable number of dimensions, and this provides a common set of analytic tools for constructing more specific models of behavioral organization across animal species. Or at least that is the program. (Tomasello 2022: 134)

I agree with Tomasello's proposal and think that it would be fruitful for cognitive semiotics. However, it is important to make two additional comments: First, agency involves all-encompassing capacities for acting in the sense of any response an organism can have (including the sense of inner temporality, affectivity, sensitivity, motor response, cognitive imagery, etc.); but also – and crucially – the capacities for assigning, attributing, recognizing, and producing the purposes and goals of those actions; that is, the generation of agendas (cf. Dijksterhuis and Aarts 2010). Second, in the Husserlian phenomenological tradition, "Intentionality" is the mark of mentality and in this proposal is "agency." Now, whereas "Intentionality" is in a sense "about an (intentional) object," "agency," given the just mentioned characteristic of assigning purposes, is not primarily "about" an "object," but relative to an "objective" which involves the use of objects. (Why "agency" is not reducible to "Intentionality" deserves a paper of its own.) Now, when considering a capacity, it is important to recognize that it is something inherently available for deployment, even if not actively utilized at a given moment (think of capacities such as walking, reading, cooking or playing chess which are only occasionally deployed, in contrast to something like breathing). The capacity understood as a potential for actualization is called *intrinsic* agency whereas its effective deployment is called *operative* agency, respectively. The ease of such deployment is relative to things such as level of expertise, level of cognitive saturation, or corporeal integrity, among others. Additionally, I will use the term "derived agency" to refer to any object, place, signs,

etc., that lack intrinsic agency and therefore do not generate their own purposes but ‘have’ purposes insofar they are attributed to them by agents (in this respect robots – virtual or real – are not ‘agents’ in the present sense). Notice then that the standards of *significance* (cf. above) are the “field” of “derived agency”: Places, objects, signs, social roles, coded activities, among others, have standards for what, how, when, where, by whom, can/must be produced, distributed, used, manipulated, interpreted, etc. However, insofar as *signification* involves an agent’s actual response, this means that signification is the “ongoing-field” of operative agency. This is an additional reason for distinguishing significance from signification.

The general capacity of an agent, that is, the totality of her intrinsic agency, can be termed “agentive capacity,” and for the purposes of this paper,⁴ it can be divided into two: agentive skills and dispositional-thematic expertise. “Agentive skill” consists of the skills and abilities to perform the range of actions (perceiving, imagining, planning, designing, speaking, running, dancing, etc.). The disposition-theme relationship is analogous to the psychological mode/propositional content relationship present in Searle (1983) or the Noesis/Noema relationship in Husserl’s genetic phenomenology (1983 [1913]). Thus, the same theme can be approached from different dispositions, and a disposition can address different themes. “Thematic expertise” will then be established in different memory systems (cf. Murray et al. 2017, 2020), while “dispositional expertise” involves dispositional states such as beliefs, desires, hopes, fears, etc.

Now, according to phenomenology, if we, as adult human agents, are awake, we are always engaged in some form of activity. This implies, in the present framework, that we are constantly performing our operative agency. In turn, this means that if we are awake, we always have ongoing agendas and are always deploying bodily resources to accomplish them. Of course, one could argue that this is an extended sense of “agenda.” And in fact, it is. This is not an attempt to clarify a common-sense notion but an attempt to test the robustness of an idea first advanced in the PLCS framework. Thus, in this proposal, there is a hierarchy of agendas, ranging from very basic and biological ones (such as the goal of hematosi), through common perception (to maintain an updated informational state of the surroundings), to more deliberate and reflective agendas that are only resolvable in a socio-historical context (such as winning a grant).

The first principle of this new approach asserts that signification arises when wakeful agents use their resources for fulfilling their agendas, regardless of its

4 A full account of the conditions of intrinsic agency involves a clarification of agents as “animated” beings with sensorimotor, affective, temporal, spatial, and intersubjective capacities. I leave this aspect aside to keep the text within reasonable limits.

complexity.⁵ In essence, signification occurs within the relationship between agents and their ongoing agendas. Given that operative agency is continuously present whenever we are awake, and therefore ongoing agendas persist, signification is a constant aspect of wakefulness; and therefore, of experience.

2.2.3 Agentive systems

Keeping in mind the above re-elaborations of agenda and agent, let me redefine the PLCS's "cognitive system" as an "agentive system." An agentive system is a triple of an Agent P, an Agenda T, and actual Resources R. Now, an *action* – in the sense of operative agency – involves taking into consideration the agentive system in which it takes place. Given the considerations made about agency, action here means not only motor action, but also encompasses perception, affectivity, speech acts, and mental imagery, which places the proposal in this respect closer to Schutz, who privileged action, than to Husserl, who made perception his privileged example.⁶ In this sense, experience imbued with meaning – that is, *signification* – emerges when an agent pursues an agenda in real time, acting on their environment in the process, independently of their success in accomplishing the agenda. In order to be meaningful, it is not necessary for it to be right.

To achieve her agendas, the agent deploys her operative agency – that is, she acts – on her environment. Here, a distinction proves useful: The *base scene* denotes the environment where the body is located and what is available to it, while the *semiotic scene* pertains to where the body's attention is directed. Essentially, the base scene is the event where and when the body interacts with its surroundings, while the semiotic scene involves the events that determine the progression of ongoing agendas, positioned "behind" the focal point of attention (cf. Arvidson 2006; Gurwitsch 1964). Typically, in direct perception, the base scene and semiotic scene can overlap. For example, suppose you have the ongoing agenda of feeding yourself. In front of you is some food, let's say, some succulent sushi. If the sushi is within reach, it is in your base scene. If you realize that the sushi is within reach and is a resource that allows you to fulfill your agenda of feeding yourself (since that is part of the *significance* of "sushi"), the sushi is in your semiotic scene. The important point is that what appears in the base scene is what is acted upon (perceived, used, interpreted) as a resource for the fulfillment

⁵ I mentioned above that in this paper I will focus on signification in human beings. However, the thesis can be broadened to include even non-wakeful organisms by introducing a hierarchy of significations and tracing the origin of signification back to the origin of life and mind, as in Thompson 2010, or in correlation with the evolution of agency, as in Tomasello 2022. The defense of such a case, however, must be deferred to another work.

⁶ I am grateful to the editor for calling my attention to this point.

of the ongoing agenda of the semiotic scene. Of course, the elements of the base scene can be very heterogeneous, both in terms of their valuation and their conditions of use (including their salience): the sushi you perceive visually might be in a glass case, and you might not have information on how to open it. Or it could be that the sushi you see is reserved for Smith as dinner: the conditions of the valuation grids are part of their conditions of significance, including the respect for others' property.

Now, suppose you are really hungry and decide to eat the sushi even though you know it belongs to Smith. This involves not aligning the conditions of significance (for example, those related to the "ownership" of things) with those of your ongoing agenda: there is precisely a violation of the intersubjective conditions of significance. Now think about a photograph of sushi. As previously mentioned, the significance of a sign involves a dual significance: that of the sign and that of what it represents. In this case, if the image appears in your base scene and you can recognize it, then the possible recognition of the image as an image is part of the first significance, whose purpose is to give access to a second significance: the represented sushi. If you, in fact, make the image enter your semiotic scene, recognize it as an image, and interpret it as representing the sushi, you have used the image and have signified it. When signs are used, it is usual to respond to them because they are in the base scene, which is accessed from the semiotic scene: if you are in the event of watching a TV series (say, the ongoing agenda is to be entertained with the events of "The House of the Dragon"), the device on which the images appear while you watch is located in your base scene and in your semiotic scene – or rather, it is in your semiotic scene because it is in your base scene, otherwise, it would be a hallucination or a dream – but the events represented about the tragic relations among the members of the Targaryen family appear only in the semiotic scene: it is you who gives meaning to these signs, filling their intended significance (by the producers and filmmakers) with your signification. This, in passing, shows an additional aspect of the relationship between the base scene and the semiotic scene: the elements of the events in the base scene occur in "real time," and are equally perceived (i.e., processed and recognized) if they enter in the semiotic scene. However, if those elements are signs, the recognition can refer to events that do not occur in the same temporality (e.g., in film, the history of the universe can be presented in 90 min) or spatiality (as in fiction) as the base scene. In this sense, it is usual for us to use signs as devices to obtain information that, without them, would be beyond the reach of our base scene.

And with this, attention can be drawn to an additional matter: while signs must be able to become part of the base scene to enter the semiotic scene, the represented, insofar as it has significance, has its own conditions of fulfillment: it is not expected that what is represented is found in a real place if it is a fiction series, but it is

expected if it is a newscast. In this way, it is within agentive systems that the actual use of signs (i.e., the signification) takes place: When an agent acts upon something, he can recognize its significance and align (or not) with its purpose, depending on his ongoing-agendas. Whichever it is (alignment/disalignment/misalignment), the signification of such action is relative to the ongoing agendas and the valuation of such use as adequate or inadequate.

Now, of course, no human agent exists in isolation. Humans cannot survive and develop (and flourish) without interaction with others. In particular, reaching adulthood as a human requires interaction with others. Caretakers play a crucial role in nurturing children and introducing them to social interaction. Children learn essential social skills, language, and culture from their caretakers, parents, and peers. Research suggests that children's ability to engage in joint attention (from 9 months of age), a concept explored by Tomasello (2019), plays a significant role in this developmental process, as it involves joint agendas. In this framework, intersubjectivity is "interagentivity," that is, a capacity for recognizing other as agents (primary intersubjectivity); and to engage in joint (secondary intersubjectivity) and collective agendas with them.

With others (both parents and peers; cf. Howes 2011; Russ 2014), children engage in acting upon their environment, typically within shared base scenes and joint semiotic scenes. Joint semiotic scenes involve joint or plural (collective) agendas, leading to mutual (if joint) or first-person-plural (if collective) expectations regarding actions aimed at fulfilling these agendas (cf. Tomasello 2014, 2016, 2019). Alongside these expectations, children learn the standards considered sufficient or optimal in the implied actions and activities, which determine their significance. These standards encompass various dimensions of social life, from permissible or impermissible uses of very different items, from food and clothing to norms surrounding music, manners, language, or master narratives (Fivush 2019), among others. Thus, different standards (i.e., significances) intersubjectively attributed to something (an object, a place, a conduct, a social role, etc.) can come into conflict, and in fact, they do so on a daily basis: Smith will protest against your eating his dinner.

Essentially, children systematically act upon their surroundings, thereby acquiring an understanding of their culture, or more precisely, the matrix of sets of significances accessible to them. Through this process, they adapt to, adopt, and ultimately secure, their membership in society. Within this framework, joint and collective agendas serve to constrain agents' behaviors based on their shared expectations about each other's contributions, as well as the resources available in the base scenes where they practice their cultural niche daily.

3 How intrinsic agency is developed and acquired: embodied habits, sedimentation, and significance

3.1 Sedimentation

One of the effects of learning skills, abilities, or information is that habits are formed. The processes that motivate signification and the diffusion of significances among the members of a community and to the next generation have been extensively explored in the phenomenological tradition; particularly, in Husserl's generative phenomenology (1989 [1936], 1973 [1939], 2001), these processes can be associated to the notion of "sedimentation." With this concept Husserl describes how experiences and practices accumulate over time to form a stable background for ongoing experience.⁷ This process has several key aspects: (a) *Accumulation of Experience*: Individual experiences leave traces that gather and form a background for future experiences. These traces become implicit or tacit knowledge and habitual structures that guide perception and action without constant reflection. (b) *Habit Formation*: Sedimentation leads to the formation of habits in perceiving, thinking, and acting. These habits shape our interactions with the world and others, evolving over time as new experiences overlay the old ones. (c) *Historical Transmission*: Sedimentation is also a socio-historical process. Cultural meanings and practices are transmitted across generations, becoming part of the shared Lifeworld. This historical dimension is crucial for understanding the maintenance and transformation of traditions and institutions over time. (d) *Pre-Reflective Background*: The sedimented layers of experience constitute a pre-reflective background that shapes our immediate understanding and interactions, operating beneath the level of conscious awareness. (e) *Setting for New Experiences*: New experiences are interpreted against the backdrop of sedimented meanings. Past experiences and cultural context influence how we perceive and make sense of new situations.

7 Similar points have been made in other philosophical traditions. For instance, a similar point is made by Wittgenstein (1953) in *On Certainty*. He even claims that some "sedimented" 'beliefs' (such as the idea that the world existed before I was born) are not beliefs as such, but rather the framework under which some ideas can be formed. In contrast, Peirce's critical common-sensism allows such claims as beliefs, but of such generality and vagueness that they can hardly be revised or genuinely doubted. Additionally, John Searle (1983, 2010) has proposed that our intentionality (in the sense of "aboutness") rests on a series of non-representational capabilities and skills which he calls the "Background." Important as these others insights are, I think that Husserl's proposal is the more systematic and suits a semiotic project better.

Typical examples of sedimentation are language, social norms or scientific knowledge: In relation with *language*, meanings of words and linguistic expressions are sedimented through their historical use within a community. When we use language, we rely on these sedimented meanings to communicate effectively without needing to reflect on them constantly; in *social norms*, customs are sedimented through repeated practices within a community. These norms guide behavior in a largely automatic way, providing a stable framework for social interaction. Now, in *scientific knowledge* scientific conceptual framework accumulate over time, building upon previous discoveries. This sedimentation allows scientists to work within a well-established framework, even as they seek to advance or revise it.

In what follows, I will try to adapt some of these reflections for the present framework.

3.2 A reframing of habits

The above insights suggest that we learn about our Lifeworld (Husserl 1989) and different systems of relevance (Schutz 1970) through the acquisition of habits. Moreover, in real-time signification, human agents deploy some of these sedimented and shared habits, which insofar as shared and sedimented constitute a Semiotic Common Ground.

However, how do we actually accomplish this? I propose that we need a hypothesis that explains effective signification as a result of the progressive and continuous use of the resources present in the semiotic scenes through the allocation of bodily resources or embodied habits according to their relevance for the ongoing-agendas.

In the following sections, I present a proposal for the reformulation of the notion of “habit” and, based on this, a hypothesis that seeks to fulfill the characteristics mentioned above. I will refer to this conjecture as the “Signification in real time.”

Insofar as the learning of these significances entails the acquisition of habits in form of skills, abilities, and information, there is a need for a reconceptualization of the concept of “habit.” Acknowledging the historical context of this concept (Barandiaran and Di Paolo 2014), and drawing from various traditions in philosophy and semiotics, I propose that habits are embodied (Dewey 1938) and acquired and learned through a diversity of actions within agentive systems (including actions such as perceiving the surroundings or listening to what we are told). They incorporate their situational genesis (Sonesson 2016b) and their historical or generative reach (Sonesson 2021), exhibit an allostatic dynamic (Schulkin and Sterling 2019), and demonstrate degrees of entrenchment (Schmid 2007; cf. Langacker 2008). Even if presented in a more programmatic and schematic manner rather than fully

argued, I think the following general claims express the main characteristics of a reorganization of the notion of habit, which can clarify the way in which actual ongoing signification takes place.

3.2.1 Habits are embodied

The central assertion posits that in the case of human agents, if agency is inherently linked to the body, that is, embodied (Varela et al. 2017; see also Clark 2008; Gallagher 2005; Thompson 2010), then both its potential actualization – cognitive, affective, sensitive, or motor – and its effective actualization are also embodied. This potential actualization has an “habitual” structure. Therefore, there are no cognitive/affective/sensitive/motor habits that exist without a bodily component. Bodily habits – and particularly cognitive bodily habits, cf. Tomasello 2022 – constitute levels of agency complexity. If we understand the complexity of an agenda as its “demand” and the process of resource mobilization by an agent for its fulfillment as its “load,” then embodied habits are integral components of the agent’s bodily resources, available to be utilized to meet a range of different agenda-demands. Consequently, if, as the phenomenological tradition posits, in our wakeful life we are always doing something, then we are always deploying to some extent our embodied habits in order to accomplish our ongoing agendas. Thus, any attempt to “de-emphasize” or “de-somatize” the role of the body in signification (whether in biological, biographical, political, historical, or cultural contexts) effectively undermines the very possibility of such signification (in contrast, for instance, to the mere potential for impactful action.).

3.2.2 Habits are acquired via actions within agentic systems

The term “disposition” is sometimes juxtaposed with “habit” to underscore the difference between what is considered “innate” and what is “acquired.” However, my interest lies not in this contrast, although I acknowledge its rationale. Here, “acquisition” refers to any process that facilitates the modification of an agent’s agency, typically through growth. Thus, while certain acquisitions develop in uncharted territory, others displace or outgrow previous acquisitions. These acquisitions include the acquisition of information (either reliable or unreliable).

Signification, as described earlier, refers to the meaning imbued in actions performed by an agent while pursuing her ongoing agendas (this includes both the agenda’s load and its demand) and to the recognized environment she interacts with (the agent’s actual deployment of bodily/environmental resources: her action in a base scene directed towards a semiotic scene).

Given that every action is directed towards a goal, habits are acquired in relation to specific goals, in the precise technical sense of the “type of result” of Peircean descendancy that is, as an abstraction which encompasses a variety of possibilities, some of which are considered as more valuable than others, thereby regulating a range of potential outcomes underdetermined by prior use of bodily and environmental resources or type of selection (cf. Short 2007: ch. 5). The scope of potential outcomes varies based on the habit’s reach: the ability to play table tennis, for example, can be conceptualized as a collection of habits whose deployment depends on factors such as the occasion, expertise, bodily state (e.g., fatigue), among others. This variability influences the effective performance. Therefore, (1) habits are also goal-oriented; (2) the body does not generate meaning in isolation but within specific environmental-historical contexts; and (3) an acquired embodied habit constrains – and in a sense, pre-profiles – its range of responses in relation to the agent’s ongoing goals and available resources (both bodily and non-bodily).

Habits develop with certain characteristics in response to the environment they develop in: habituating the body to perform a maneuver or a complex response in a hostile environment is not the same as doing so in a friendly one. Environmental conditions encompass not only objects or signs but also other agents. It is through interaction with others that we learn to habituate and navigate the environment.

3.2.3 Habits incorporate their situational genesis

Here, “incorporate” denotes the process of becoming a part of the body, derived from the Latin *corpus*. Therefore, “incorporation” signifies an outcome of bodily acquisition. In turn, “situation” refers to the immediate setting of the agentive system (e.g., base scene/semiotic scene) in which the action takes place. In this context, the “situation” grounds the conditions for habit acquisition.

During successive situated actions and interactions, agents undergo several processes: (a) They learn to “inhabit” their environment; (b) they become “habituated” to their surroundings; (c) they “inherit” the habits of previous generations, learning the scope of their significances and incorporating them as their “heritage.” This heritage encompasses various aspects, ranging from language and culinary tastes to religious practices, good manners, scientific methodologies, and ideologies. In a sentence, “heritage” here means the cluster of significances of previous generations one inherits which constitutes part of the culture.

Ultimately, our inherited heritage contributes to our Common Ground. The incorporation of habits implies that agents habituate, inhabit, and inherit the “historical” context of their growth and continuous socialization. In essence, if habit acquisition results from successive situated actions, then through the acquisition of embodied habits the agent incorporates her Lifeworld (cf. Sonesson 2016b).

3.2.4 Habits are involved in an allostatic dynamic

While “homeostasis” is associated with the concept of regulation to maintain equilibrium at an optimal level based on certain functions and its mechanism is feedback regulation (Cannon 1929), the concept of *allostasis* (Sterling and Eyer 1988) is linked to dynamic regulation through change, where multiple optimal levels can exist depending on the current situation, and it operates through feedforward regulation (error prediction). Allostasis is considered crucial for understanding the sustainability of life, as life depends primarily on allostatic metabolic regulation rather than homeostatic regulation (Schulkin and Sterling 2019). The brain does not wait to be stimulated before responding, as such a delay would have jeopardized survival (Humphries 2021: ch. 10), but it is permanently active, and it is now hypothesized that such activity has an allostatic nature (Schulkin and Sterling 2019).

Allostasis has been successfully applied in naturalizing the mind, as evident in various domains, such as perceptions as hypotheses (Pietarinen and Beni 2021; cf. Gregory 1980); emotion construction (Barrett and Simmons 2015); interactive alignment in language (Pickering and Gambi 2018; Pickering and Garrod 2011); event segmentation (Radvansky and Zacks 2014; Stawarczyk et al. 2021); social organization (Saxbe et al. 2020; Schulkin 2011); and mental disorders such as depression (Barrett et al. 2016; Neemeh and Gallagher 2020) and stress (Ganzel et al. 2010). Moreover, allostasis has been proposed as a model for action regulation, evident when an agent’s hand grip anticipates the shape of an object to be grasped (cf. Berthoz 2000) or when an agent’s gaze predicts the trajectory of a falling object (King and Shanidze 2011), illustrating implicit heuristics. For a more detailed perspective, see Clark (2016, 2023).

Beyond survival, there are expectations regarding others’ behavior and adherence to rules and norms, which partly stem from behaviors observed in infancy (Tomasello 2009, 2014, 2016, 2019) and partly from the heritage of delayed-return cooperative behavior that emerged in the genus *Homo* almost 800,000 years ago (Planner and Sterelny 2021).

Acquired embodied habits prepare and capacitate the agent to behave predictively and adaptively across different scales (temporal, spatial, motor, affective, inferential, etc.). This involves a template-type dynamic structure rather than a token-punctual static structure, with continuous and progressive adjustments based on prediction errors. In concrete action, agents deploy their resources (cognitive, emotional, motor actions, etc.) to continuously adjust the predicted or detected effects of actions.

Considering that the body regulates its resources allostatically, it becomes, at a certain level of description, the fundamental resource for signification. For example, if concepts are embodied (Barsalou 2008), they are part of the bodily resources

available when situations demand their actualization. This implies that the anticipation of effects (or in other words, the monitoring of fulfillment or progress in fulfilling agendas) is an inherent part of signification (which partially explains why experience has this structure of anticipation). To the extent that the minimization of prediction errors is part of such anticipation, it can be said that signification is governed – at least in this dimension of generating expectations – by a certain cognitive economy.

Due to their dispositional nature, habits exhibit characteristics analogous to a subjunctive conditional schema: if certain circumstances were present, then certain responses would be options for action, resulting in specific expected effects. This association reflects the pragmatist link between habits and meaning, where habits represent conceivable effects (as in Peirce's pragmatic maxim) and have their mode of existence as *esse in futuro*, which has not been overlooked by allostasis theorists (Schulkin 2015).

3.2.5 Habits have different degrees of entrenchment

"Entrenchment" denotes a cognitive phenomenon wherein the more frequently something is used (particularly concepts, cf. Langacker 2008), the more typicality effects are expected in its utilization (cf. Sonesson 2016a). This increased frequency leads to enhanced cognitive efficiency and reduced cognitive load, resulting in a better cognitive economy. Typicalities not only influence anticipated logical possibilities but also plausible experiential scenarios. Furthermore, typicalities exhibit resilience and are not easily invalidated by isolated counter-instances. This resilience stems from the adaptively generic nature of entrenchment, which is context-dependent rather than universally applicable (cf. Gabbay and Woods 2005a).⁸

In decreasing order of entrenchment, the entrenchment of habits encompasses: (a) belief-like habits immune to criticism, characterized by vagueness and generality (as in Peirce's critical common-sensism); (b) habits of default and generic nature (Gabbay and Woods 2003: 17–19), akin to Aristotelian *endoxa*; (c) habits prone to significant variability and individual variation in implementation, such as reading or musical habits; (d) fluid and adaptable habits acquired recently.

⁸ For instance, we can say that the use of the proposition "birds fly" as a generic claim is "robust" or "resilient," because it is not invalidated by finding a counter-instance, such as Tom the penguin. Generally, we can "safely" say that birds fly. In contrast, if the proposition "all crows are black" is used as a universal claim, it is "brittle" because it can be invalidated by mentioning a counter-instance. And, in fact, pied crows, hooded crows, and house crows are not all black.

3.2.6 Habits can be described according to different dimensions and parameters

The parameters of habits can be organized in Spheres, Strata, Breadth, and Depth.

“*Strata*” denotes the organization of systems of embodied habits, which scaffold each other across varying scales of interpenetration and complexity. Consequently, habits can be both embedded and nested within one another. The articulation or meshing of habits may be partial, but typically allows for openness, facilitating the emergence and coalescence of new habits and the exploration of new sets of possibilities. Strata need not be arranged hierarchically; instead, they may exhibit diverse heterarchical forms of organization.

A prime illustration of a complex and intricately intertwined stratum is grammar, which configures a system of systems characterized by varying degrees of meshing, partial overlaps, and diverse ways of deployment, ranging from regimented to unregimented.

“*Spheres*” refer to the experiential contexts in which habits are typically deployed, aiding in the attunement of the agents to their environment. For instance, swimming is typically performed in water, while running, while possible, lacks the same fluidity when done in water. Some spheres may exhibit high levels of regulation, such as institutionalized rituals, while others may be less regulated. The degree of regulation within these spheres is established in relation to shared valuation grids of the significances.

“*Breadth*” pertains to the ongoing deployment of embodied habits, facilitating the anchoring of ongoing signification (near and far retention; cf. Rodemeyer 2010: 232–233) and opening up pertinent, compatible, plausible, coherent, and cohesive possibilities (near and far protentions), as per models of optimization and precision expectations. This concept draws parallels with Gurwitsch’s notion of the “sphere of consciousness structure” and the dynamics of compatibilities and incompatibilities of expectations. In ongoing signification there can be alignments and misalignments between intrinsic and imposed relevance, and attunements or misattunements in the contextual relevance.

“*Depth*” refers to the level of expertise in the set of skills and abilities an agent possesses for performing within their respective domains of existence, achieved through the deployment of embodied habits rooted with varying degrees of depth. For example, walking exhibits greater depth than dancing, and snapping the fingers is shallower than grasping. It is important to distinguish between *real depth* or expertise and *virtual depth*, which refers to attributed expertise (to actions, activities, practices or social roles) within a Common Ground and is subject to intersubjective expectations and standards. Thus, the virtual depth attributed to a medical doctor about some anatomical issues does not correspond to the real depth, if the physician in question has forgotten anatomical minutiae.

3.2.7 Sedimentation involves deep entrenchment of habits

Sedimentation in relation to the formation of habits and the constitution of a pre-reflective background consists in well-entrenched embodied habits which allow inhabiting and habituating to an environment in a fluid way. To the extent that an agent's body is itself a medium and a basic resource for most (if not all) goals and actions, there is an intrinsic relation between well-entrenched habits and sedimentation. Whoever incorporates *generative habits*, in the sense of trans-generationally accumulated habits (cf. Sonesson 2016b, 2018, 2021), *inhabits* older and sedimented habits. Sedimented habits of all kinds (epistemic, perceptive, bulesthetic, technical, inferential, emotional, etc.), then, prefigure (foreshadow, hint at) the range of possible responses the agent would deploy at the proper occasion, which would be the presumably and plausibly appropriate responses to that very (type of) occasion. Notice that, insofar as habits are goal-directed, these peculiar generative habits pre-select a series of responses not only for performing one's own actions but also for evaluating others' actions.

For example, regarding doxastic sedimented habits, believing what others say – especially during early socialization – allows us to inhabit current or future situations with the habits of others and to become accustomed to them. Sharing common beliefs, handed down from generation to generation, is like covering oneself with the same doxastic umbrella. Intersubjectivity, through the possibility of creating joint or collective agendas, enables the creation of Common Ground. Conversely, Common Ground facilitates, through cognitive economy, the diffusion and transmission of significances, that is, of culture. Within this Common Ground, signs, objects, and places are available or accessible to the people inhabiting it. As discussed earlier, this is how signs acquire their significances, and in learning them, we literally incorporate them.

The Common Ground then implies: (1) *shared habits*, in the sense of collective habits (including such things as Bourdieu's *habitus*), and (2) *joint and plural habits*, in the sense of potentially mutual or intersubjectively articulated habits. Joint habits, when performed, can lead to joint commitments (Gilbert 2013). Thus, learning to inhabit habits is also learning culture; to recognize others as “others,” or oneself as part of “us” (cf. Sonesson 2016a).

In the Common Ground there are “shared” valuation grids. This does not commit the agent to a necessary acceptance or compliance with the grids, but just to the recognition of their presence and circulation in a certain Common Ground. What is more, this sharing opens the door to the disputability of those very grids (as in union marches), and the proposal of new standards for the production, circulation, distribution and interpretation of diverse social items, including those appreciated for very different reasons.

In this way, “[a]n individual’s cognitive and decisional competence is in significant part constituted by his social relationships” (Gabbay and Woods 2003: 20). This is not little. The point is that whatever the resources are for the agents in a certain environment, the way in which they consider, recognize, and use them depends also on the way in which their skills, abilities, and competences have been intersubjectively co-constituted.

4 How operative agency is deployed: ongoing ground and signification

In the above section, the following idea was advanced: We develop and acquire abilities, skills, and information with others in social learning and interaction, and those elements can be understood as capacities (someone with a structuralist stance would say “competences”), particularly as *embodied habits*. Now the next question arises: How are those embodied capacities deployed? In this section, I will try to present an answer to that question.

The way an agent deploys her skills and abilities moment-to-moment (i.e., in real time) constitutes her ongoing signification and forms her *ongoing ground*. This ongoing ground is deeply intertwined with the *ground-in-course*, which consists in the deployed layer of the implicit Common Ground. Within the ongoing process of signification, that ongoing ground can contain information not pertaining to the Common Ground, as happens in experiences of new things. Now, from the total agentive capacity, only a subset of embodied habits is actually utilized to construct the temporal ongoing ground. The reason for this is relatively straightforward: deploying all available habits would be cognitively inefficient and lead to overload, and cognitive economy precisely consists in avoiding that. However, understanding how this selective process occurs is more complex.

Consider the following example. Think of one of your favorite historical figures. It is safe to assume that this figure is a human being. Now, do you know that people have livers, pancreases, and carotid arteries? You likely do. But have you ever actively thought about the liver, pancreas, and carotid arteries of *that* particular historical figure? Probably not. This example illustrates an important point: not all available ideas come to mind because they may not serve any immediate purpose. Typically, information that is recruited in real time, is so as a response to ongoing purposes (this is the agent/agenda thesis). These purposes are usually attempted to be achieved with the most efficient responses, which are often facilitated by deeply entrenched habits or recently activated information. This is a first level at which

compatibilities and incompatibilities are pre-traced (pre-figured) in the sedimented habits. Notice that at this level, the signification concerning the inner organs of an historical figure is not impossible, but *irrelevant*. Thus, there is a first lesson from this point: even if available, not all of what is recruitable is recruited. Recruitment of information is relative to ongoing agendas and what is relevant is relevant in relation to those ongoing agendas.

But there is a second level: Consider the phrase “a big Chihuahua” and compare it with “a big dog” and “a big ant.” These are three instances of the use of the expression “big.” However, typically, we might think that a big Chihuahua is not considered a big dog (as a Great Dane would be), and that a big ant will not reach the size of a big Chihuahua, unless it is in a science-fiction movie where ants can become as large as dogs. Note that this case is not about the irrelevance of the relationships between the juxtaposed elements, but about their *plausibility*. In this way, the successive (temporal) juxtaposition of elements involves a progressive stacking of significations whose order (both temporal and of priority) establishes a set of ordered and deployed expectations. As has been noted many times, it is not the same to say that “they went to Germany together and got married” as it is to say that “they got married and went to Germany together,” as the canceled implicature “although not in that order” shows. The fulfillment of these expectations provisionally establishes an ‘ongoing ground’ with respect to which further expectations are generated regarding the following significations.

There is a second lesson to be learned from this: even if available, not everything that is recruitable is recruited because the recruitment of information is not random among relevant possibilities; it involves ranges of compatibilities in relation to ongoing expectations. Since ongoing expectations are relative to ongoing agendas in relation to background information (sedimented embodied habits), the ordered, ongoing, stacked information (currently deployed habits) limits and hierarchizes the range of its compatibilities, that is, the plausibility of expectations.⁹ This is evident, for example, in the context of jokes.

So, our current challenge is understanding how individuals deploy their sedimented (and entrenched to varying degrees) habits to make sense of their ongoing experiences. The lesson from the examples above suggests that we tend to activate information along paths of least resistance. This results in less cognitive effort and greater efficiency. Entrenchment and sedimentation highlight the tendency to prioritize cognitive efficiency. Moreover, the notion of less resistance or more fluid experience indicates a form of pre-filtering of information, akin to

⁹ This is closely related to both allostasis and the minimization of prediction errors mentioned earlier.

the selection process established by the attentional sphere (and to Schutz' intrinsic relevance). Alternatively, attentional selection could be seen as the conscious counterpart of an unconscious system for filtering information.

In summary, we must explore how certain information is deployed or prevented from being deployed in relation to specific purposes. I think this latter question is answerable insofar as we can provide an accurate response about the relation between relevance and irrelevance in signification.

4.1 A brief exploration of executive functions

Although there is still some controversy around the best manner of characterizing their organization, the term "Executive Functions" (EF) encompasses those cognitive processes that underlie goal-directed behavior (Shimamura 2000), particularly the goal-directed cognitive control of thought, action, and emotion (Zelazo et al. 2013), and that are organized by activity within the prefrontal cortex (Fuster 2015; Passingham 2021). EF can be divided into core and high-level functions.

Three functions are recognized as "core" functions (Best and Miller 2010; Diamond 2013): inhibition, working memory, and cognitive flexibility (shifting).

Inhibition refers to the ability to control one's attention, behavior, thoughts, and emotions to override a strong internal predisposition or external lure. It consists of two main components: On the one hand, Response Inhibition is related to the ability to suppress prepotent, tempting, or automatic responses. For example, refraining from impulsive or inappropriate actions (self-control). On the other hand, Interference Control is related to selective attention (cf. Wu 2011) and cognitive inhibition, which is the capacity to ignore irrelevant stimuli or noise, facilitating a focus on the goal at hand. In general, Inhibition is crucial for self-control.

Working Memory refers to the ability to hold and manipulate information over short periods (i.e., seconds). It involves both holding information and processing it to achieve a goal. In Baddeley's (2012) model, working memory includes the phonological loop (for verbal information), the visuo-spatial sketchpad, the episodic buffer (where information is blended and prioritized), and the central executive (which establishes the goal and direction of information processing). Working memory is essential for reasoning, learning, and comprehension. It allows individuals to follow multi-step instructions, solve problems, and engage in complex cognitive tasks.

Shifting refers to the ability to switch between tasks, mental sets, or perspectives. It builds on the other two core features and involves two sets of abilities: First, Task Switching is the ability to move between different tasks or mental processes efficiently. An example would be switching from writing an essay to preparing food.

Second, Set Shifting is the ability to adapt to changing rules or priorities. For example, adjusting strategies when playing a game or shifting attention based on new information. Shifting is critical for adapting to new situations, problem-solving, and creative thinking. It enables individuals to transition between activities and keep multiple chunks of information in mind simultaneously.

Now, *high-level EF* emerge from core features. They include reasoning, problem-solving, and planning (Diamond 2013: 152). While a detailed discussion of these three high-level functions is not necessary in this context, it is important to emphasize that EF as a whole are critical in any form of human signification. They are involved in goal generation, goal monitoring-progression, and error detection (Fuster 2015), reasoning, social cognition, emotion regulation, decision-making, meta-cognition, and executive attention (Passingham 2021). In particular, they are present in selecting, maintaining, updating, and rerouting information processing (Shimamura 2000). EF also operate in motivationally and emotionally significant situations (“hot EF”), as well as in more affectively neutral contexts (“cool EF”; Zelazo and Carlson 2012).

This overview of EF leads me to make two comments: First, from a phylogenetic point of view, it is not only important that human beings have a complex central nervous system (as reptiles do), and it is not even sufficient that they are mammals; what is crucial is that they are primates (Wise 2024). This distinction allows us to clearly differentiate between what is cognitively flexible and what is not, particularly in hominid primates (with a complex prefrontal cortex). In mammals, the prefrontal cortex presents agranular areas. However, in anthropoid mammals (primates), in addition to the agranular areas, there are granular areas in the prefrontal cortex (granularity depends on layer 4). These granular areas are particularly developed in the human species and, as far as has been determined, only appear in humans (cf. Passingham 2021). This evolution runs in parallel with a hierarchy of agency organization as proposed by Tomasello (2022: 124), from reptilian agency (from 350 million years ago), mammal agency (200 million years ago), great apes (20 million years ago), and humans (400–100 thousand years ago).

Second, from a semiotic perspective, EF provide an empirical anchor to the notion of the *semiotic scene*, which was introduced as a conceptual posit for distinguishing between the traditional subject-object relation (intentionality) and the subject-objective or agent-agenda relation, and in this latter, particularly, in connection with operative agency. The first relation (subject-object) is subordinated to the second (subject-objective) in terms of the signification process. It was previously mentioned that in the semiotic scene, attention is allocated, and agendas are monitored. Now we can say that the semiotic scene is the semiotic counterpart of EF, just as the base scene is the semiotic counterpart of bodily actions on the surroundings.

The ongoing ground – which, then, is present in the semiotic scene – is plastic and dynamic due to cognitive flexibility (shifting), which allows for the organization and reorganization of recruited stacked information (working memory). Additionally, it disregards and sets aside factors that hinder the fulfillment of ongoing agendas (inhibition).

Yet, the precise processes by which signification takes place are still open to further articulation.

4.2 Signification in real time: a hypothesis

Let me go back to the PLCS framework. In PLCS, *relevance* is relative to agents and is defined for “quadruples $\langle X, I, B, A \rangle$,” where X is a practical agent, I is some information, B is the agent’s background information, and A is their cognitive agenda (Woods 2014: 28). Something is deemed relevant to the degree to which it aids in accomplishing the agent’s agenda. In this sense, for an agent, the relation between B (background information) and I (information) need to be explicated more.

4.2.1 Background information

I take it that an agent’s background information – although this is controversial – includes the information he or she has incorporated in the form of embodied habits.¹⁰ Insofar as social interaction involves participants generating expectations from their sedimented embodied habits and mutually accommodating and adjusting in relation to those expectations, it seems safe to say that they share a Common Ground that facilitates (and occasionally promotes) those adjustments. It seems, then, that for two agents, the more fluid their interactions are in different settings, the more depth and spheres are shared, and the greater their Common Ground is.

In this sense, I take it that Background information is part of an agent’s sedimented habits (including the Common Ground she can potentially share with others)

¹⁰ I am grateful to one of the reviewers for drawing my attention to the fact that it could be surprising to associate information with embodied habits, as this gives me the opportunity to clarify. I use “information” in the sense that it is an organized response, which otherwise would be “raw data” or “raw stimuli.” For instance, when learning how to use a word, a person learns that the word is used for a certain purpose, that its use is associated with (or consists of) a certain response, and that it has certain restrictions due to other words around it (grammar), etc. Here, the content or information of the word is the response it would be appropriate to deploy in order to accomplish certain purpose. It is in this sense that I associate information with embodied habits, which could include patterns of synaptic potential, dispositional responses, partial recruitment from semantic memory to working memory, etc. An “embodied habit,” as I understand it here, has the systematic possibility of being deployed. The mechanism(s) by which this is possible is what is currently at stake.

and is systematically recruited on a daily basis. Background information “pre-traces” and “routes” the range in which its deployability is possible. Thus, when background information is brought to the forefront (the mentioned above ‘ground-in-course’), it is presented as “obvious” or, in a Peircean manner, “a matter of course.” But, of course, “obviousness” is a mark of sedimentation. In this sense, recruited Background information imposes a certain “grammar” in which the elements of a system can be used in relation to an ongoing agenda (which is usually taken as an agenda within the range of pre-traced agendas to which the agents have aligned. In this context, both Schutz’s concepts of intrinsic and imposed relevance naturally find their place).

4.2.2 Information

On the other hand, I take that an agent’s Information refers to recruited (deployed, activated) information; in particular, information which he can be phenomenally conscious of, and that means, information phenomenally accessible; for instance, as present in working memory (Baddeley 2012) and attention (Wu 2011), i.e., because of the EF’s operations. Here some empirical findings are important. From a computational point of view, adult non-neurodivergent persons have, on average, a capacity for the conscious processing of 40–50 bits/s of information (out of that, approximately 14–16 bits/s can be dedicated to phonological processing), whereas non-conscious global processing is estimated to be in the order of 11 million bits/s (Nørretranders 1998: 125–126; Zimmerman 1989: 172). The “reduction” of information from the sensorium to consciousness is, as a minimum, outstanding. Now, it is at this phenomenal level that information stacking – as mentioned above – takes place. Working memory models propose that recruited information can be active during a few seconds, and probably more, if attentional effort is exerted. So, the *Ongoing Ground*, constituted by the effects of advanced and stacked information, has not only an informational structure but a temporal one. On the informational side, it establishes compatible expectations in the sense of “plausibilities,” which, for instance, it is typical of “conventional” and “conversational” implicatures (Grice 1975), which sometimes can be retracted. On the temporal side, recent information is more salient than non-recent information.

Now, once again, let me go back to the PLCS framework. In my adaptation of the PLCS I say that an *agentive system* is a triple X, R, A , of an *agent* X , not-bodily resources R , and an *agenda* A executed in real time (cf. Gabbay and Woods 2005a: 10). Of course, this defines an agentive system for an individual practical agent. However, in joint or plural signification (as in a quotidian conversation) there can be two or more agents, deploying their resources (even if in different base scenes) but with a joint or collective semiotic scene, which imposes allocation of resources for

the fulfillment not just of “my” but “our” agenda. Such chiasmatic crossing of agentive systems has as an effect on the construction – or even better: if dual, a co-construction – of a *joint ongoing ground*. Note that the ongoing ground – and particularly if it is a joint ongoing ground – can have different levels, in the sense of the “thickness” of the produced “stacks.” As the construction of an ongoing ground is carried out in real-time within frames or windows of action or interaction, the most salient set of expectations will be the one to which the significations “adhere” most fluidly. Call this dimension of the ongoing ground its “salience.” This implies that the ongoing ground can have different levels and degrees of “salience” and “adherence.” For example, consider what happens when, in a conversation between two people, one of them makes a joke. If the conditions of the tone with which it is expressed are framed and embedded in a situation where the Common Ground and the Ongoing Ground admit a joke (and these conditions of admissibility also depend on how robust or fragile the Common Ground is), telling the joke has a content whose temporal processing is crucial to understand it as a joke (that is, the condensation of usually divergent contents and the affective texture that surrounds them, cf. Weems 2014). Additionally, the signified joke, as framed by the values advanced in the Common Ground and/or the Ongoing Ground – given that a joke might be celebrated in one situation while considered an inadmissible offense in another – has the consequence of generating another layer in the Ongoing Ground. If it is celebrated, it allows for further elaboration (it might even be celebrated but considered inappropriate, leading to subsequent elaborations being marked as rejections). If rejected, it refers to a possible horizon of expectations in which returning to it or making similar comments might lead to a breakdown of the *joint Ongoing Ground*.

Now, in any action, ongoing agendas invariably exist, and signification is continually generated. As demonstrated by Short (2007), any use presupposes the purpose or objective of said use. Therefore, any item insofar signified – even if incorrectly used due to misattribution of its recognized derived agency or significance – is signified in accordance with the agent’s ongoing agendas.

4.2.3 Relevance

Finally, relevance is also relative to agendas. Thus, information is relevant insofar as its presence contributes to the accomplishment of a given agenda, whereas if it does not it is irrelevant. The point here then is that in signification, people have deployed what they consider relevant information and filtered and prevented the deployment of irrelevant information. Dov Gabbay and John Woods, who first advanced the PLCS (Gabbay and Woods 2003, 2005a), also proposed that we have filtering systems of information (Gabbay and Woods 2005b; Woods 2014). Their proposal at that moment

was a theoretic requirement for the PLCS. I think that there are now some empirical findings that support such a theoretical posit.

Thus, if we give to the informational filtering systems proposal some positive plausibility, I would like to advance a hypothesis about how it is that information is deployed by agents in ongoing agendas, that is, how sedimented habits are deployed and their effects help construct the ongoing ground. (Remember that the ongoing ground is not only constructed by the deployment of already acquired embodied habits, but it can also contain information sourced from the present environment, advanced for problem-solving in cooperation, etc.) The conjecture is described in the next subsection.

4.3 Signification in real time

There are cognitive constraints in signification. One of the most important are *irrelevance filterings* (Gabbay and Woods 2005b; Woods 2014). Sedimented habits are, by themselves, “pre-filtered background information” (including Schutz’s systems of relevance). When irrelevance-filter processes are operative in real time (cf. Marchi 2020), filtered information (e.g., via predictive error minimization: Baghdadi et al. 2019; Griffin and Fletcher 2017) helps the advancement of the agenda. Then, “spotlighted information” is “grounded,” and its face is revealed, warts and all (e.g. misinformation and bias moles are frequent). But this “spotlight grounded information” is supported by *scaffolded strata*, *rooted depths*, *attuned spheres*, and *anchored breadth*; that is, mostly in non-spotlighted information. All that information is partially dependent on embodied habits, from the most sedimented (and, therefore, historically pre-filtered), to the most superficial (recent or inconsequential). Involved information is part of the cognitive load and has a bearing on the closure of the ongoing agendas.

If the hypothesis is sound, immediate consequences ensue. For now, I will only discuss a few that concern pragmatics. For instance, joint agendas in conversation imply that agents deploy their embodied habits in such an intertwined manner as to achieve conversational success, as demonstrated in interactive alignment models (cf. Pickering and Gambi 2018). If the shared embodied habits are not sufficiently similar, lack proper joint coordination and attunement, or are not deployed to establish recognizable expectations, misinterpretation may occur. It seems that this understanding of the phenomenon appears more realistic than the cognitively burdened approach advanced by the relevance model of Sperber and Wilson (1986).

At the level of resource deployment, phenomena such as implicatures involve finely tuned expectations. Even a minor misadjustment at this level could be considered a semantic or pragmatic anomaly.

Presuppositions entail not only the deployment of compatible shared semantic resources and effects but also the acknowledgment of this compilation as part of a joint activity, including joint attention and joint intention. This represents an adjustment at a micro-scale level.

In the context of verbal communication, if conversational fluency is a criterion for fine-tuning, fluency is not only possible but overwhelmingly frequent, yielding significant rhetorical effects. In the hypothesis proposed, this implies that (1) the anchoring, scaffolding, rooting, tuning, and control of informational flux over the range of embodied habits in concrete situations is operative (including event models of different scale, cf. Zacks 2020); and (2) filters for irrelevance are in place to modulate the pertinence or suitability of identified informational ‘moves’.

An example could be illuminating. There is a large list of works trying to elucidate the meaning of the phrase “That surgeon is a butcher,” assuming that it is a metaphor (or better, a metaphoric expression). I will not linger on previous solutions. However, I think Brandt and Brandt (2005) make a good point when they treat the phrase as a real signification advanced in a real conversation between two persons, one hospitalized for surgery, the other her visitor, who is, besides, her partner (I will not pronounce about the mental space framework in which they make their proposal). What I want to highlight is that the phrase becomes a metaphor because of the use it is given in that situation: as partners the two have a large Common Ground and the signalized scar stacks in the Ongoing Ground as the phrase to be pronounced and understood as a metaphorical expression. However, this does not depend on the phrase *per se*. Think of the following case. It is Halloween, and a costume party is organized. Upon arriving, one of the guests sees another guest dressed in surgical attire. In response, the host clarifies, “That surgeon is a butcher.” In this case, the most plausible interpretation is that the guest dressed as a surgeon is actually a butcher by profession. What I want to highlight here is that the phrase should not be considered a metaphorical expression but rather an ellipsis. This example also illustrates that this ellipsis occurs for cognitive economy: it is shorter to say it this way and sufficiently relevant given the joint agenda of identifying the guest. This means, in turn, that it is risky at the level of significance to establish what the rhetorical effect would be, given that it is in signification that proper rhetorical effects take place.

5 Final remarks

In the first part of the present paper, I tried to show that an agentive framework can offer an approach to semiotics (in the vein of Peirce’s heritage) and that such a framework is improved if it is pragmatized by giving priority to agents and their

actions, instead of to signs (the PLCS heritage). In this sense, the present proposal reverses a traditional way in which the relation between semantics and pragmatics is constructed. In traditional terms, the semantics of signs offers their meanings, while pragmatics adds concrete uses to the semantics. Here the explanation goes the other way around: first are the concrete uses of signs, and their semantics offer stabilized, but detached, and therefore abstracted, ways in which the actual responses take place. Here, then, semantics is the “residue” of living pragmatics, and not the starting point for an explanation of what signification or meaning is. By the same token, to ask for the “meaning of a sign” is to ask how is to be used. Insofar as “meaning” is stabilized as standardized “significance,” in “significance” there is no intrinsic or operative agency, whereas in the “signification” of signs, an actual agent uses those signs, operative agency is deployed and living meaning is generated. The emphasis on agents (and not signs) involves asking – as Austin clearly saw – “How is it determined that someone knows how to use/interpret a sign?,” rather than “What is the meaning of this sign?.” And, in passing, apropos of Austin, it can be seen that the agent’s ongoing agendas can capture what is called “utterer’s meaning,” while “significance,” in the case of linguistic significance, captures what is called a “word’s meaning” (Austin 1961).

In the following section, I aimed to show, with the help of some phenomenological posits as semiotically interpreted by Sonesson, that the way in which agents acquire familiarity and fluency in action and the use of signs depends on the acquisition and incorporation of habits, which I termed “*embodied habits*.” In these, the role of sedimentation is doubly crucial: On the one hand, they account for the expertise with which agents carry out their agendas (individual entrenchment). On the other hand, insofar as they are acquired through interaction and with the assistance of other agents, they account for the Common Ground shared with other agents, both those with whom one has been socialized and those who, even if not personally known, have been socialized in a similar manner (collective entrenchment). In this sense, even if the present proposal can be recognized as “cognitive,” it is not reductively cognitive (as if everything that has meaning were recruited in working memory), because it tries to incorporate both socio-historical and cultural aspects of meaning, precisely through the notion of *embodied habits*. However, at the same time, it is not exclusively phenomenological, insofar as it includes cognitive findings and debates within the cognitive sciences not only as empirical findings but as an empirical touchstone. At the same time, it is not an exclusively semantic proposal (as in the “mental spaces” approaches) insofar as extra-mental-spaces conditions are part of its core.

The following section took advantage of the idea that there is a continuous deployment of intrinsic agency, which takes the form of operative agency, making signification (conscious, as long as there is wakefulness) constant. In this case,

appealing to the findings of cognitive sciences, particularly concerning Executive Functions, allows for the pertinence of notions such as “semiotic scene,” “ongoing agenda,” or “ongoing ground.” Additionally, the approach highlights the feasibility of conducting empirical studies with this framework and leveraging results already offered by these sciences for its enrichment. Such a possibility is advanced with the hypothesis of “signification in real time,” which, even though it draws on recent findings, requires further testing.

Finally, the analysis of the examples presented shows at a micro level (i.e., for micro-events with limited participants, joint agendas, and few interactions) that the framework can not only present novel results but also reframe traditional problems in such terms (for example, rhetorical effects or implicatures). Additional work at the “meso” and “macro” levels is required to account for more extensive socio-semiotic processes, and in this way, to continue the semiotic elucidation of the Lifeworld that was of great interest to Göran Sonesson.¹¹

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