random-access tape memories or universal Turing machines), grammars and computational automata become successively more expressive but also more resource-consuming, syntactic vocabularies richer in their encoding capacities, and languages harder to recognize.

BASE SYNTACTIC ABILITIES

Having access to different classes of formal grammar, $\mathbb{K}$, $\mathbb{S}$, and $\mathbb{M}$ can syntactically structure their picturing reports concerning the pattern-governed regularities of their world. For example, if we were to reproduce their report concerning the presence of a mass of fuzzy grey item in a context-free grammar (context-free syntactic expressions can be approximately described as concatenated structures of dependency relations recursively constructed from more basic block structures or syntactic expressions whose logical units do not overlap), such an encoded report— signalled via sound-tokens—could be presented as the following syntactic expression SYN:

$$\text{SYN: } [\mathbb{M}[\mathbb{S}[\mathbb{K}[N_r\,[G]],[G\,[B_c\,]],[B_c\,[G[N_s]]]]]]$$

In the above syntactic report, the order of block-structures and dependency relations can sufficiently encode the sequence and relations of items and occurrences so that no predicative expression (e.g., 'was there', 'will scream', 'is next to the monolith') would be needed. In other words, the syntactic order of the nested brackets replaces time and location stamps t and p as well as relations conveyed by predicative expressions. Mere signs or one-to-one mapping/representing functions, as argued earlier, could not obtain this syntactic configuration, even though it is as a matter of fact built on them. It is only with the advent of symbols and their combinatorial capacities that such syntactic structures of increasing complexity become possible.

If a rough *analogical* translation of this syntactically structured report had to be given, after adding the predicates it would be:

> Matata thinks based on the report given by Sue that Kanzi reports the presence of a fuzzy grey item after hearing a rustling noise. The fuzzy

item is now contacting the heap of black and will make a shrieking noise as it touches it.

Or, in a more truncated version but with nested brackets:

[Sue says that [Kanzi says that [the monkey [[whose steps] [were heard]]]], [is now moving [toward [the monolith [to examine it [and will scream]]]]]]].

Note the similarity of this syntactically sound but rather nonsensical sentence—from our *ordinary* linguistic point of view—with the CHILD's unquoted but tagged world-awarenesses which, as we saw, were the necessary components for the constitution of an objective worldview.

Let us briefly clarify these points before moving forward: Now that the automata are equipped with formal grammar or syntax, they can encode the (nonconceptual) structural or syntactic relations between causally registered invariances regarding items and occurrences. In other words, it is by virtue of their syntactic abilities that they are capable of recognizing (in the special computational sense of accepting inputs) the sequence or structural relations between causally pictured items and occurrences. Patterns and relations which the toy universe had no recognizer or syntactic language capable of encoding, would be counted as nonexistent to the automata. To claim—as Sellars subtly suggests and Ruth Millikan firmly asserts—that the syntactic configuration or the structure of pattern-governed regularities—if there are in fact *real* patterns in the universe—is already available to mind by way of the manner in which such pattern-governed regularities are registered or pictured causally in the wiring diagram/nervous system of the automata, is to endorse a *syntactic version* of the myth of the categorial given. It is only with the advent of the combinatorial capacities afforded by symbols and formal syntactic abilities, the computational infrastructure of language, that the necessity of causal mappings or picturing functions for the structuration of the world can find syntactic (not semantic) structural relations sufficient for the semantic or conceptual structuring of the world.

The next point is that syntactic reports such as *SYN* consist of causally pictured items and occurrences whose syntactic configuration embodies rule-governed conceptual activities. It would be helpful to use Sellars's example of chess to clarify how the calculus of such syntactic observational reports inscribed or uttered in acoustic symbol-designs—but which could equally be designated with graphic or gestural elements—embodies the rule-governed conceptual activities that disambiguate and elaborate them.

A chessboard can be seen as a two-ply system consisting of a metagame and game. The metagame consists of the formally stated rules of the game chess, which are equivalent to material inferences determining the inferential role of linguistic expressions. At the metagame level, we have rules of how to set up and move the chess pieces. While these metagame rules are not per se part of the game, the players nevertheless need to be acquainted with them in order to competently play the *game* of chess. In contrast to the metagame, the game consists of syntactically configured or structured observational reports or pattern-governed regularities: only to the extent that the players can reliably distinguish black from white, a this-shaped piece from a that-shaped piece, and are able to syntactically encode the relations between the pieces, i.e., the position of the pieces on the chessboard (next to, behind of, in front of, diagonal to), can the game be played and the metagame rules obtain.

For example, at the game level we can have a symbol-design or syntactical inscription such as [♚[♗]] which reads as, this-such (*tode ti*) piece of thus-and-so shape and colour (the black king) is in a diagonal relationship with this-such piece of a different colour and shape (the white bishop). This chess configuration is the equivalent of the syntactically structured picturing report SYN. Moving from game to metagame, though, we have the conceptual sentence 'Black king is checked by the white bishop'. Within the metagame, there are rules or inferential transitions that tell us 'If the black king is checked by the white bishop → then interpose the black bishop. Shifting from the metagame back to the game, the player then moves diagonally this-such piece (the black bishop) between the previously obtained configuration of this-suches in diagonal relationship with one another: [♚[♗[♝]]].

In Sellarsian terminology, the move from game to metagame, the rules or transitions within the metagame, and finally the move from metagame back to game, respectively stand for language entry transitions (perception), intra-linguistic transitions (thinking) and language exit transitions (intentional action). However, a more accurate description of the move from game to metagame would be as a transition from *syntactically structured* symbol-designs with material characteristics to *semantically structured* material inferences (conceptual activities). In other words, even the entry transition from game to metagame requires language, albeit language at the level of structure-encoding syntactic abilities. As we saw earlier, mapping functions or nonconceptual representings—causal capacities to discern and respond to pattern-governed regularities—by themselves lack the robust syntactic-classificatory relationships necessary in order for them to sufficiently embody rule-governed conceptual activities. Only syntactic abilities could encode such structural and classificatory relationships between material signs or inscriptions and so between the items and occurrences nonconceptually represented by them. And, as argued, such syntactic abilities require symbols in the special sense introduced above, along with the generative combinatorial processes they afford. This is why the term 'symbol-design token' was chosen instead of 'sign-design token' to denote the ability to make nonconceptual classificatory tokens that do indeed have syntactic 'structure-encoding' configurations.

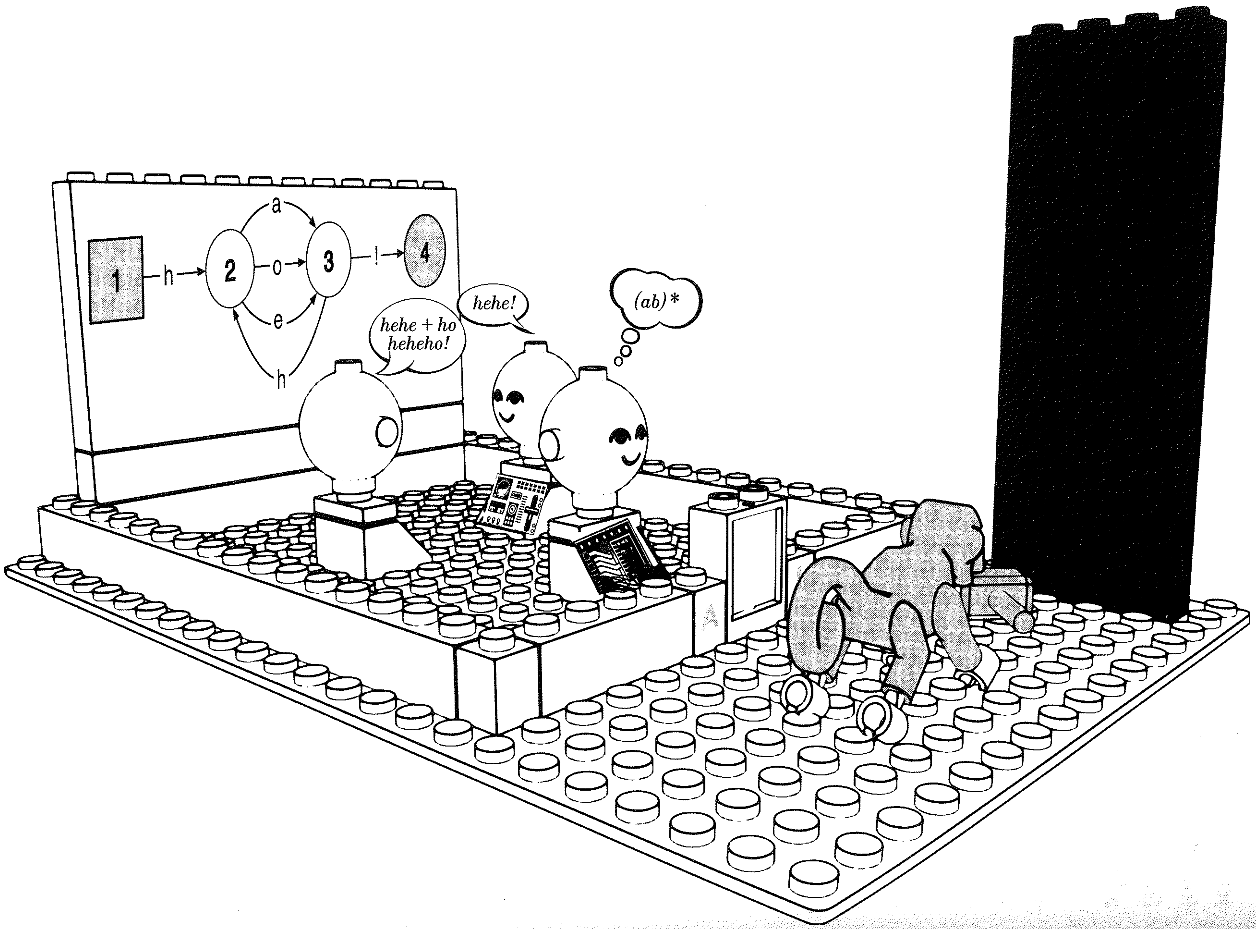
In addition to the ability to nonconceptually structure or classify their picturing reports by encoding them with syntactic configurations, the automata now also have the ability to deploy syntactic vocabularies in their interactions. Earlier we assumed that the automata's only medium of symbol-design tokens is sound. Accordingly, in the toy multi-agent system, the parsing and production of expressions in different formal grammars or syntactic languages is achieved solely by means of the shared inventory of compositional sound-tokens. Applying a selected class of production rules to acoustic tokens combined with the basic criteria of sound composition for making a phonologically permissible concatenation would produce strings of sounds that map a specific set of syntactic structures. These properties represent the distinct level of syntax to which that expression or vocabulary belongs. Any string that projects such properties or structures would be recognized by the automata as a syntactic utterance in the language that produces such properties and structures *with the caveat that the automata would have the ability to recognize or parse the expressions of that syntactic language.*

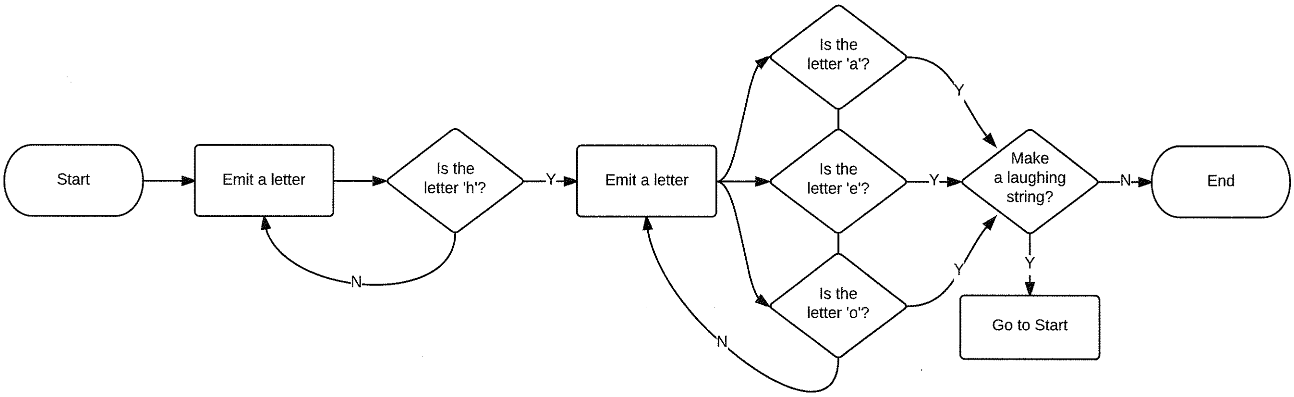
For example, if the automata are capable of deploying syntactic vocabularies in the regular language of the Chomsky hierarchy, any string of sounds or symbolic combination from the external environment or another artificial multi-agent community that matches the formal properties and the structure of a regular Chomsky language can, *in principle*, be recognized by our automata as an utterance in *their* (syntactic) language. That is to say, the automata can potentially recognize or compute any string of sounds, gestures, or inscriptions whose syntactic relations map onto the syntactic relations of the language they can parse.

Following Brandom's example of the laughing Santa,[244] imagine that the automata were only able to deploy syntactic vocabularies—laughing strings—in the regular language of the Chomsky hierarchy using just four sounds [h], [o], [a] and [e]. We can call such automata *automatic laughing bags*. As automatic laughing bags, the automata can recognize and produce syntactic vocabularies or laughing strings in the form *haha!*, *hoho!*, *hahahohohehe!*. The algorithmic ability to deploy such syntactic vocabularies or laughing strings can be modelled on a finite state machine: To make a laugh, the automatic laughing bag starts with state 1. If the first sound is not *h*, the laughing bag does not move forward to the next state. If the sound is *h*, it issues an *h*-sound and moves to state 2. In state 2, if the sound is not *a*, *e* or *o*, it remains stuck again. But if it is *a*, *e* or *o*, it emits one of these sounds and moves to state 3. In state 3, if there is a terminating sign *!* , it moves to state 4 and makes the shortest laugh (*ha!*, *he!*, *ho!*), ending the process. But if it chooses to make a longer laugh (i.e., if there is an *h*-sound instead of *!*), it moves back to state 2 and repeats the process for any amount of time until it reaches the terminate command *!*. Any string that reaches the final state would be an item of laughing bag vocabulary

244 Brandom, *Between Saying and Doing*, 16.

recognizable by all automatic laughing bags. See the following diagram for the state transitions of the recognizer automaton and the accompanying flowchart containing the instructions for producing a laugh-token within a finite repertoire of discrete sounds.





Automatic laughing bags

In the hierarchy of syntactic complexity, practices-or-abilities sufficient to deploy a vocabulary—i.e,. what one has to do in order to recognize and produce something in a syntactic language—and vocabularies sufficient to specify those vocabulary-deploying abilities—i.e., what one has to say to specify a set of practices-or-abilities required for making a vocabulary in a syntactic language—are both algorithmic abilities. They allow higher syntactic complexities (languages with more expressive powers and higher structure-encoding capacities) to be algorithmically bootstrapped from lower syntactic complexities.[245] In this fashion, using lower sufficient vocabulary-deploying practices-or-abilities (PV-sufficiency) and sufficient practice-specifying vocabularies (VP-sufficiency),[246] the automata can, in principle, construct vocabularies of higher syntactically complexity which are at once more expressive and stronger in terms of their computational powers and their capacities to encode structures.

So far the automata have acquired exchangeable symbol-design tokens whose syntactic configurations, systematic relationships, and material characteristics express—nonconceptually—facts about how things are. The automata can assign *rudimentarily classifying* labels made with syntactic beeps and clicks to this-suches of items as a matter of reliable differential responsive dispositions. Thus, for example, in the presence of this-such bulbous pile of green, $\mathbb{K}$ utters beep-beep-click-click. And in the presence of the mass of fuzzy grey moving up on the pile of green or some other more involved occurrence among stuffy this-suches, it makes again in such sounds a well-formed syntactic sentence that configures the syntactic

245 '[In] this setting we can prove that one vocabulary that is expressively weaker than another can nonetheless serve as an adequate pragmatic metavocabulary for that stronger vocabulary. That is, even though one cannot say in the weaker vocabulary everything that can be said in the stronger one, one can still say in the weaker one everything that one needs to be able to do in order to deploy the stronger one.' Brandom, *Between Saying and Doing*, 20.

246 VP-sufficiency and PV-sufficiency (P for practices-or-abilities and V for vocabularies) are the most basic meaning-as-use relations. There can also be VV-sufficiency and PP-sufficiency, respectively, vocabularies that specify other vocabularies and practices that elaborate other vocabulary-deploying practices.

relations between such labels and their corresponding this-such items. We can say that the automata have something like protothoughts of the form 'do (or don't do) actions of kind *a* when in circumstances of kind *c*', what Sellars may call 'rehearsing intentions' or, in this case, proto-intensions.[247]

Moreover, the automata are now in possession of algorithmic syntactic abilities through which they can construct more complex structure-encoding abilities, and recognize and potentially compute more intricate patterns. There is no reason to doubt that the automata of our toy universe may read and write more expressive syntactic vocabularies and compute more complex syntactic sentences, with higher structure-encoding capacities, than our base syntactic capacities. But what they do not have is the semantic structuration of the diverse relationships between syntactically pictured reports. They do not have inferential or rule-governed intra-linguistic transitions to *conceive* (i.e., bring into conception) such reports, to elaborate the relationships between such reports based on their material incompatibility and consequence relations and, if necessary, to repair or revise such reports. In other words, they do not have the objective reports that the fully fledged language-using Sue and Matata had, because they do not have propositions whose conceptual contents are determined by their inferential roles since they have not yet achieved the practical mastery of inference. Thoughts are only thoughts to the extent that they stand in inferential relations to one another, that is to say, in so far as they are individuated by their inferential articulation in a public language. Intentional relations (thinking-abouts) require semantic relations, and semantic relations require a public language as the engine and vehicle of their realization.

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247 'Now, the fundamental principles of a community, which define what is "correct" or "incorrect", "right" or "wrong", "done" or "not done" are the most general common *intentions* of that community with respect to the behavior of members of the group. It follows that to recognize a featherless biped or dolphin or Martian as a person requires that one think thoughts of the form, "We (one) shall do (or abstain from doing) actions of kind A in circumstances of kind C". To think thoughts of this kind is not to *classify* or *explain*, but to *rehearse an intention*.' Sellars, *In the Space of Reasons*, 408.

Ultimately, what our automata do not have is a semantic space defined in terms of a public language they can be plugged into and, through participation in it—via mastering the practices it entails—generate a hierarchy of semantic complexity. Ascending this semantic hierarchy is tantamount to practical mastery of the use of vocabularies expressing the right kind of concepts of different grades and roles:

> These are concepts that let us make explicit—put into judgeable, thinkable, assertable, propositional form—the inferential relations that articulate the 'space of implications' that is the context and horizon within which alone what we do acquires the significance of rational, discursive consciousness of what we respond to.[248]

Intentional ascent, or the complexity of thinking thoughts, demands a *semantic ascent*—that is, a hierarchical complexity of both different grades of concepts (i.e., inferentially articulated contents) and the practical know-how to use or apply concepts correctly. In ascending the hierarchy of semantic complexity, the automata attain semantic self-consciousness. They become discursively aware of how things are by thinking about thoughts through thinking about concepts that inferentially articulate those thoughts, and thereby the things thought of.

However, the revolution of syntax in our toy universe, as we shall see in the next chapter, has also another consequence as significant as—if not more than—the buttressing of semantic capabilities. But what is this consequence? It is what we might call Carnap's vision of language in general as a calculus or, in reference to the work of Steve Awodey and André Carus on Carnap, the picture of language as an unbound ocean freed at last both from 'Wittgenstein's prison' (the picture-theory of language) and from the 'Kantian straightjacket' (subordination of the logical and formal dimension to sensible intuition).[249] To put it concisely, this is a picture of language as a calculus of general syntax. In Carnap's own words:

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248 Brandom, *Reason in Philosophy*, 10.

249 Ibid., 10.

> By a language we mean here in general any sort of calculus, that is to say, a system of formation and transformation rules concerning what are called *expressions*, i.e. finite, ordered series of elements of any kind, namely, what are called *symbols*. [...] In what follows, we will deal only with languages which contain *no expressions dependent upon extra-linguistic factors*. [...] two sentences of the same wording will have the same character independently of where, when, or by whom they are spoken.[250]

Seeing language as a calculus, or as the boundless system of formation and transformation rules in the realm of symbol-design, is not to reduce language to calculus. Such a view of language does not entail the rejection or downplaying of the perceptual-representational, social, and cultural aspects of language. The point is that expanding the scope of language—what it is and what it can do—cannot be effectuated in earnest if the structure of language is subordinated to prior representational, social, or cultural considerations. To understand language as a general calculus in the way Carnap envisioned in *The Logical Syntax of Language* is to finally blur the line not only between syntax and logic but also between language and computation. It might be objected that such a picture of language sacrifices the semantic dimension. Not necessarily. In fact, to treat semantics as irreducible to or fundamentally distinct from syntax is to regard semantics as a deus ex machina of some sort—that is, to see meaning as the *miracle* of language. Surely, it is not the case that semantics can be invariantly reduced to syntax, but it is indeed reducible to syntax under the right conditions. These right conditions, as we will review in the next chapter, signify the interactionist view of syntax through which semantic complexity emerges immanently through the confrontation of syntactic processes or symbolic chains.

Therefore, we can say that Carnap's logical-syntactic view of language is not anti-semantic. It concerns the 'semantic in disguise'.[251] Disenthralling language from established semantic rules or representational concerns

250 R. Carnap, *Logical Syntax of Language* (London: Kegan Paul, 1937), 167–8.

251 P. Wagner, *Carnap's Logical Syntax of Language* (Basingstoke: Palgrave Macmillan, 2009), 14.

is not equal to forgetting the semantic. It is rather an unprejudiced way to imagine more generalized languages capable of capturing ever richer semantic relationships. If we consider structure as the dimension of mind, namely, language and logic, we cannot broaden the intelligibility of reality or postulate new kinds of worlds populated by new intelligences and facts of experience without broadening the scope of language and logic. And we cannot expand language and logic without taking the prospects of language as a calculus of forms—where the boundaries of syntax, logic and computation become porous—seriously. Language, as the combined forces of logic and computation, is the ultimate medium of concrete world-building. But we cannot build new worlds, discover new sectors of reality, or make new forms of intelligence without new ways of language-building—the design of which will require that we liberate the picture of language, and for that matter logic, as organons from any limitations set in advance by the representational functions and semantic values of language or the correct application of logical laws to intuitions à la Kantian transcendental logic. It is this idea of unrestricted world-building as arrested by the boundless conception of language-building that typifies intelligence not as a passive receiver of an external reality but as the very exemplification of enriching and engineering reality—that which progressively postulates itself as a new inhabitant of new or different kinds of structured worlds.

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Before moving on to the next chapter, which is the last stop in our thought experiment, it would be helpful to provide a rough outline of the issues we have navigated so far and where we are headed.

We began with a picture of mind whose function is structuring or self-conception in accordance with an *objective* world. Mind as the organ of structuration was elaborated via a family of fundamental correspondences or dualities (as differentiated from dualisms)—intelligence and intelligibility, theory and object, structure and being, and so on. In addition, we surveyed the relation between language, logic, and mind. The conclusion was that we cannot know what intelligence is or what it can become without inquiring into the structuring function as that upon which all our descriptions regarding what counts as intelligent or general intelligence are modelled. In other words, thinking about intelligence or geist—what it is now and what it will be—is a matter of investigating and renewing the link between mind and world, structure and being, theory and object. The investigation and renewal of this link is the very definition of concrete self-consciousness as a task. And the first step in this task is nothing other than investigating the conditions necessary for the realization of mind as that which has a concept of itself in an objective world.

Such necessary conditions were introduced as enabling constraints for having thus-and-so universal capacities which we not only associate with general intelligence but must also employ to model any form of intelligence. We subsequently started our examination of such enabling or positive constraints in the framework of an extended thought experiment after disputing the unconstrained conceptions of intelligence and assessing which models or paradigms are best suited for conducting such an inquiry. The investigation into such constraints took two distinct but interconnected trajectories at the intersection between mind and objective world: (1) an in-depth analysis of the necessary enabling constraints or conditions for the realization of mind based on our own current—theory-laden and scientifically-informed—self-image as minded subjects; and (2) a critique of transcendental structure to determine the degree to which such necessary constraints—what they are and what we take to be their essential characteristics—are fraught with or distorted by cognitive biases originating from the local structure of our experience and psychologistic residues. Properly understood, the latter trajectory is tantamount to the full-scale Copernicanization of the transcendental subject itself, and therefore the unmooring of the conceptions of mind and intelligence. Yet arriving at a conception of intelligence that is of nowhere and nowhen is only possible by following these trajectories.

Following these two trajectories, then, we looked at the initial necessary constraints upon the order of appearances: space and time as forms of intuition. Next, we inquired in the conditions necessary for having thoughts and objectivity or objective validity. The latter brought us to the question of syntactic complexity and semantic complexity as the dimensions of structure at the intersection between language, logic, mathematics, and computation. Having looked at the necessary conditions for syntactic complexity in this chapter, we can now move on to the question of semantic complexity or semantics in general. In the next chapter, therefore, we follow this line of inquiry, starting from the bridge between syntax and semantics and in the process uncovering a picture of language behind our ordinary natural languages, one which is no longer burdened by the local and contingently constituted biases entrenched in the structure of natural languages.

7. This I, or We or It, the Thing, Which Speaks (Language as Interaction as Computation)

THE PRAGMATIC INTERFACE

To ask how our automata can transit from their base structure-encoding syntactic abilities to semantic structuring abilities is fundamentally to ask how syntax can be bridged to semantics. Building this bridge is not straightforward, in so far as no amount of *algorithmic* base syntactic abilities can generate semantic abilities. Yet to claim, as John Searle does, that syntax by itself is not sufficient for semantics is a recipe for the inflation of what meaning is, along with a myopic interpretation of what syntax is and what syntactic expressions do. This is of course a claim encapsulated in the Chinese room thought experiment, an argument that simultaneously presupposes a potentially mystifying account of meaning, a peculiarly anaemic interpretation of syntax, and an outmoded understanding of the relationship between syntax and semantics.[252]

Syntax, under the *right conditions*, is indeed sufficient for semantics, and meaning can be conferred upon syntactic expression if such conditions are satisfied. These conditions are what the inferentialist theory of meaning,

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252 Searle's Chinese room thought experiment is predicated on the assumption that semantics is generally (i.e., under all conditions) irreducible to syntax. As will be argued, this view essentially falls under the deflationary-inflationary bipolar picture of language, where deflation of semantics leads to an inflationary account of syntax at the expense of ignoring the question of semantic complexity. And similarly, the inflationary account of semantics results in an ineffable picture of language and meaning. One of the main reasons behind the Chinese room view of language is the wrong framing of what is going on in this thought experiment. The actual computation is not happening within the room (the syntax manipulator) itself, but is the interaction of the person inside the room and the person outside of it. Semantics, therefore, emerges out of the interaction of minimal syntactic rules or confrontation of basic axiomatic acts.

as a species of social-pragmatics or the use-theory of meaning, attempts to capture. It argues that meaning is ultimately, at its most basic level, the *justified* use of mere expressions in social discursive linguistic practices; and that what counts as the *justification* of an expression is what counts as its meaning. While syntax by itself does not yield semantics, it does so when coupled with interaction. In this sense, pragmatics—at least in the sense defined by Brandom's inferentialist pragmatism—can be understood as a bridge between syntax and semantics. Broadly speaking, semantics (content) is concerned with what is said, while pragmatism (use) is concerned with what one is doing in saying it (i.e., discursive practices-or-abilities that count as deploying a vocabulary, conferring or applying meaning). More precisely, semantics asks what it is that one believes (or knows, claims) when one believes that p (a content), whereas pragmatism asks what it is that one must know how to *do* in order to count as producing a performance that expresses that content.

Leaving behind the representational account of meaning and meaning as denotation, inferentialism, as a species of pragmatism, treats the meaning of linguistic expressions in terms of their inferential relations embedded in social discursive practices. To this extent, the capacity to know, believe, or mean something rests upon certain practical know-how (i.e., pragmatism), the practical mastery of inferential roles. In the inferentialist semantics-normative pragmatics framework, semantics can be said to concern the meaning-conferring inferential roles of syntactic expressions in the context of social discursive practices or linguistic interactions.

Within this setup, the noises or behaviours of interlocutors can only count as saying or claiming something if said interlocutors know what to do—in accordance with rules and following some standards or norms—such that they can *draw inferences* from each other's claims, using such inferences as the premises of their own claims and reasoning. Here, syntactic expressions as items of language assume semantic value or meaning when they are incorporated into the interaction of practitioners of discursive practices that give inferential roles to such utterances. These are practices that adopt or attribute normative statuses, commitments, and entitlements that stand in consequential relations to one another.

For example, endorsing the belief or claim 'This is red' entitles one to the belief that 'This is coloured' but precludes the claim that 'This is green'. Thus, from this point of view, one must know what sort of performances must be carried out in order for one to count as endorsing a belief or claiming that p, and what must be done in order to track what follows from such endorsements and claims. To assert or judge 'This is red', one must not only be able to react—as a matter of RDRD (reliable differential responsive dispositions—see chapter 5)—to the presence of this-such item, one must also have the practical know-how regarding what must be performed to inferentially connect such a state, expression, or noise RED to other states or expressions, thus conferring conceptual content upon them (i.e., red as a concept qua an inferentially articulated content). Consequently, one can grasp or understand the content of the concept red or any other concept by grasping the significance of the pragmatic performance of committing to the claim 'This is red' (a speech act) in terms of the difference it makes to other interlocutors' commitments and entitlements to commitments. That is to say, linguistic discursive practices can be defined in terms of tracking or keeping the score of other practitioners'—or interlocutors'—commitments and entitlements (asserted claims and what follows from them or does not).

In this sense, for an interlocutor, the significance of a performance or a speech act ('This is red') is ultimately a matter of the way in which it interacts with other interlocutors' commitments and entitlements—this interaction requires that the deontic context of such a performance be *updated*, and in doing so, the previous context is given a score. To use a simplistic example, when $\mathbb{K}$ asserts 'This is red', it is entitled to 'This is coloured'. But when $\mathbb{S}$ asserts 'This is red mixed with blue', $\mathbb{K}$, having recognized the shade of blue (RDRD plus the inferentially articulated concept blue) is required to acknowledge the force of $\mathbb{S}$'s assertion with regard to the consequential scorekeeping relations between its commitment and entitlement, and to update (keep, revise, or discard) them: 'This is not red', 'This is purple', and 'This is coloured'. The content of the concept can then be characterized in terms of this updating function. Therefore, we can say that grasping the content of a concept and grasping the concept of reasoning as certain (i.e., objective and linguistic) practical knowhows are interdependent. Briefly put, reason as the articulation and elaboration of the concept is a *doing*, and as such there is no good justification for refusing to view reason in terms of the algorithmic elaboration or decomposition of abilities which can be realized by different kinds of information processing systems. In this interactive framework, the assertion *that p* can no longer be thought as a fully formed propositional content that is either true or false, but instead is thought as a conditional assertion whose meaning and truth can only be decided when it is put into *inter-action* with queries and counterclaims which test and challenge it: a game in which, by making a move or defending a commitment *that p*, one is prohibited from making other moves. This move is akin to a hypothesis whose construction involves processes of verification or being tested by other strategies or agents (i.e., other moves made in the game).

What is interesting about Brandom's inferentialist pragmatism is that it gives a picture of natural language not simply as a symbolic medium but as a rule-governed framework inseparable from the interaction of its users—an interaction in which all necessary (non-inferential) capacities of agents are integrated. One might object that Brandom's pragmatism is susceptible to the same charge levied against traditional pragmatism, namely that one must know *all* the rules of language in order to function, to say or claim something contentful. As he shows in his tour de force *Between Saying and Doing*, however, this is absolutely not the case. Normative scorekeeping pragmatics—the game of giving and asking for reasons—can begin with a minimal set of rules, and it is only in the context of interaction between interlocutors that more rules can be established, their know-how mastered, and their form made explicit. Therefore, once deepened, Brandom's version of analytic pragmatism represents—to appropriate Jean-Yves Girard's term—an emergent logic of rules. Brandom's pragmatism is thus a true species of discursive rationality in the sense that discursive rationality, even at the level of mastering the know-how of claiming or asserting something, *takes time*.

However, probably the weakest link in Brandom's pragmatism is the way in which the sociality of social linguistic discursive practices is defined.

This sociality is merely asserted, but hardly plays any major role in how meaning-conferring discursive practices are logically modelled. Sociality then becomes a substantive characteristic of discursive practices rather than the very logical condition of language and the nonsubstantive order of thinking. Absent the explicitation of the role of sociality as a *formal* condition, the concept of sociality risks becoming an inflated metaphysical posit that results in a concept of rationality unconscious of its insufficiency for change at the level of concrete social practices. The necessity of reason, language, rational discourse, and an understanding of the machinery of conceptual activities for social change can then be passed off as their sufficiency for concrete change. Short of the consciousness of this necessity-cum-insufficiency, the very discussion of reasons and conceptual activities leads to a socially liberal and philosophically quietist stance. Therefore, Brandom's thick notion of sociality converges on a Habermasian rationality persistently unconscious of its insufficiency. To this extent, using a thick notion of sociality to define linguistic discursive practices becomes just as precarious as using the right-wing Sellarsian's thin notion of agency and normativity.

At this point, we should admit that we have a foggy and faulty notion of sociality which prevents us from grasping the role of interaction, and undermines the program to bridge from syntax to semantics while emphasizing language and sociality as a constitutive condition. Our notion of sociality may be defectively indeterminate, but that is exactly why we should reinvent the notion of sociality as an interaction that can be elaborated logically and computationally. The articulation of sociality as a formal condition is the first step that must be taken in order to unbind rational capacities as well as to rescue the nebulous concept of reason from deep-seated dogmas. The former is a necessary—albeit basic and not adequate—move that must be made if we are to think about substantive sociality and social norms. Therefore, to reemphasize the role of sociality in language and thinking—as the bridge between syntax and semantics—we must redefine this index of sociality as a formal condition best captured by the logico-computational concept of interaction. In this sense, interaction is a sufficient condition for building the syntax-semantics interface. The question is now as follows: