domain in a far broader expanse of logico-computational phenomena that a general artificial language—unrestricted by the experience of the transcendental subject while embedded in the logic of interaction—would be able to cover. It is owing to its entrenched association with the experiential sphere of the transcendental subject that natural language is often falsely given a special status over artificial languages and, conversely, artificial languages are taken to be in principle inadequate in comparison with natural languages. Yet subordinating the structure of language to the structure of the subject invariably results in a subordination of the logical potencies of language for structuration of the world to a narrow domain limited by the particular transcendental structure of the subject.

The valorisation of subjective experience or psychology against formalism or, in this case, the formal dimension of language, is precisely the kind of bias that leads to the erroneous thesis that natural language is unshakeably superior to artificial languages, or that artificial languages cannot possibly capture the semantic richness of natural languages. And of course, the claim regarding the fundamental inferiority of artificial languages goes hand in hand with the verdict that mind cannot be artificially realized. Both language and mind are treated as ineffable or mysterious essences which yet somehow miraculously do what they do.

Valorising experience against the formal dimension of language is a formula for the limitation of experience. Only the richness of the formal can express or expand the richness of experiential content. The significance of artificial languages as languages realized at the intersection of computation, mathematics, and logic boils down to the fact that they have the capacity to sufficiently extract and distil the expressive richness of the formal dimension, which in turn enables a better grip on experiential content. Accordingly, to expand the field of experience—with the understanding that experience is inconceivable without its content—language should not be subordinated to the interests of the experiencing subject. Instead, it should be decoupled from the experience of the subject. In the same vein, the detachment of formal languages from the communicative role of natural languages should also be regarded as an opportunity to grasp the functions of language in themselves. In this regard, shifting from language as the

medium of communication to interaction-as-computation—the protological foundation of language and logic—unbinds the logico-computational functions of language while making it possible to rethink, reimagine or reinvent linguistic communication on a completely different level.

Unbinding language means permitting its formal dimension to come forth and be fully expressed on the surface of language. The aim of the explicitation and mobilization of the formal dimension of language is not simply to achieve syntactic efficacy (mechanizability) or semantic transparency as afforded by formalism, but to augment world-structuring abilities by augmenting the syntactic-semantic expressivity of language. In this respect, the abilities afforded by natural language as a form of language whose evolution is tied to the restrictions imposed by the structure of the experiencing subject would be merely a small archipelago in the vast sea of syntactic and semantic abilities afforded by a general artificial language. In other words, natural language represents only a fraction of the logical autonomy of the formal as the transcendental dimension through which the content of experiences can be accessed and whereby mind becomes able to structure the world of which it is a part. As far as logical autonomy (rather than practical autonomy) is concerned, it would be no exaggeration to claim that a *programmable* toaster has more logical autonomy than all of homo sapience combined.

The discussion on artificial general languages and the autonomy of the formal brings us back to two overarching themes of this book. One is the inquiry into the transcendental structures or conditions necessary for having mind qua configuring factor. And the other is the critique of transcendental structures, whose aim is to procedurally unbind the conceptions of mind and geistig intelligence from limitations and biases originating in our contingent constitution and the seemingly fixed particularity of our transcendental structures, rather than dispensing with transcendental structures tout court.

Following these two trajectories, however, was impossible without a deep analysis of the functional picture of mind combined with a multiplicity of methods which are traditionally not in the toolbox of philosophy in order to strip away and dig through that seamless façade which is the natural

order of things (the alleged naturalness of our time-consciousness, sociality, and language, among others). This is all to highlight the fact that extensive analysis and methodological assiduity are not auxiliary to the Copernican gesture of deracinating the transcendental subject and hurling the concept of intelligence into the abyss of intelligibilities. They are the very principles of this Copernican gesture by means of which the apparent facts of experience are peeled off to reveal a larger expanse of possible experience and thus of objective reality—a process through which our most treasured assumptions are challenged, to ensure that they are not subject to the experiential and cognitive biases of transcendental structures. The Copernican gesture is akin to a chain reaction; to follow the chain in either direction—toward the source or the consequences—one must have a fluent enough paradigm to shift from one method or model to another when necessary.

In this sense, this chapter's rather technical survey of language was an indispensable elaboration on the much broader themes of this work. On the one hand, this introductory analysis indicated that natural language is only the tip of the iceberg of general artificial languages—that is, the unrestricted scope of language—where traditional distinctions between language, logic, mathematics and computation (or more generally, language and logoi) begin to vanish. On the other hand, it underlined the significance of the implications of a revolution initiated by Gottlob Frege and less well known figures such as Hermann Cohen to shed the psychologistic and utilitarian residues of thinking and language, a revolution that was continued into the twentieth and twenty-first century by the likes of Quine, Carnap, and more recently Dutilh Novaes, but was most effectively carried out by theoretical computer science as the unifying philosophy of computation.

LOGIC AS AN ORGANON AND AS WORLDBUILDING

Construction of general artificial languages is thus commensurate with the conception of logic as an organon. Such equation is guaranteed to elicit the ire of orthodox Kantians who may still believe in the hard distinction between form and content or opposing logic as a canon to logic as an

organon which according to Kant is the 'logic of illusion' or 'a sophistical art'[276] on the grounds that it is not constrained by the empirical sources of truth, sensible intuitions or information outside of logic.

What Kant means by logic as an organon is a formal tool for the production of objective insights or an instruction for bringing about a certain cognition that can be said to be objective. This conception of logic is then characterized as the science of speculative understanding or the speculative use of reason—the organon of the sciences. On the other hand, logic as a canon still refers to the formal use of logic (regardless of its content, which can be empirical or transcendental) but this time as delimited by the characterization of logic as the canon of judging (i.e., the mere criteria of the correct application of the laws of thought or judgements) which requires and is constrained by extra-logical information.

Kant's opposition of logic as a canon to logic as an organon is based on a historical reading of the controversy between Epicurus (the defender of canon) and Aristotle (the defender of organon). Yet, it is necessary to point out that Kant's dismissal of logic as an organon entirely relies on an antiquated Aristotelian definition of logic. Regardless of how we interpret logic, this very distinction becomes tenuous in the wake of the revolutions in formal and mathematical logic in the twentieth century as well as the advances of theoretical computer science. But the precariousness of restricting logic to a canon at the expense of rejecting logic as an organon can also be formulated via a question posed against orthodox Kantians: So, you think that form without content is arbitrary (i.e. unconstrained), but could you tell us what is *content without form*? Surely, entertaining the possibility of the latter even under the most critically cautious eyes is another variation of that ideological house of cards which is the Given. The whole notion of logic as a canon describes a game of logic already rigged by the representational resources and limits of the apperceptive subject constituted within a particular transcendental type.

Kant assumes that thinking about logic as an organon means believing that we can 'judge of objects and to assert anything about them *merely* with

276 Kant, *Critique of Pure Reason*, B86.

logic without having drawn on antecedently well-founded information about them from outside of logic.'[277] In this and other passages in *Critique of Pure Reason* which are riddled with focusing adverbs such as *merely* or *solely*, Kant seems to be advancing a trifling and obvious point not only as a profound remark but also as a refutation of the conception of logic as an organon: At least since the time of Plato's *Sophist*, we know that *what is said* is not equal to *what is*. Indeed, the equation of the two is the core tenet of sophism: so long as we know the rules of deductive syllogism, we can call ourselves masters of all sciences. However, logic as an organon neither implies the aforementioned equivocation—i.e., the claim that logic is by itself sufficient for judging about the stuff in the world—nor does it require any metaphysical commitment with regard to logic—the claim that laws of thought are laws of the world.

In contrast to Kant's straw-manning, all that the conception of logic as an organon suggests is that our resources of world-representation are in fact beholden to and caught up within the scope of our world-building, and in this case, the worlds of *logics*. In other words, it would be absurd to talk about objects without the primacy of logical structure, logoi, or the formal dimension. Kant would have agreed with this view, but only in an inconsequential manner. Why? Because if all talk of the object is meaningless without theory or logical structure, then the expansion of the field of logic or determinate thought-forms unconstrained by all concerns about representation and subjective experience would be an absolutely necessary step in order to constitute objects, make objective assertions, and *deepen our discourse about objectivity*.[278] This primarily unconstrained view of logic as the indelible factor for object-constitution is exactly what we can call logic as an organon. Without it, all we can ever achieve is pseudo-talk of stuff, i.e., Aristotelian *this-suches* or *tode ties*.

---

277 Ibid., B85.

278 For two views of logic and language as an organon, see Carnap's *Attempt at Metalogic* (*Versuch einer Metalogik*) and *Logical Syntax of Language*, and Petersen's *Diagonal Method and Dialectical Logic*.

Moving from the sense impression *fuzzy mass of grey* to the judging assertion *this is a monkey* requires the addition of logical structure. But the constructive characterization of logical structure is not a priori limited by representational concerns. Indeed, to adequately hone the notion of logical structure demands the treatment of logic in terms of unrestricted logical world-building, that is to say, unconstrained by any enforced representational consideration (whether the experiential content, the empirical source of truth or the criteria of correct application of logical laws to items of the real world) that may establish the frontiers of logic in advance. It is only when we attempt to decouple logic from any representational or world-referring constraints that we can ensure a sufficiently enrichable framework of world-representation. The world-constructing resources of logic in itself precede and in fact undergird world-representation, our understanding or judgements about the world. To make a Carnapian slogan, *construction of the world is prior to the constitution of the object and the knowledge of it.* This priority is not only priority$_1$ in the sense of one temporally preceding the other, but also priority$_2$ in the order of constitution. It is priority$_2$ which is, properly speaking, the focus of logical world-building and describes the conception of logic qua an organon of which general artificial languages as the apeiron of the formal dimension are exemplars.

This idea of logic as a world that ought to be infinitely constructed without any prior restriction is incommensurable with the idea of logic as something that ought to be coordinated with the real world in the first instance. Kant's transcendental logic as a species of pure specialized logic—i.e., one concerned with a particular use of understanding—is precisely a conception of logic that is not just conservative with regard to the possible scope of logic (how general logic can be expanded and enriched); in addition, in so far as it is built on the conception of logic as a canon—i.e., constrained by representational concerns—it harbours epistemic implications which are nightmarish to the say the least. The picture of the objective world we represent may very well portray a series of subtle and distorted variations of ourselves and our entrenched biases. As long as logoi are shackled to our representational system, we cannot even be conscious of our Dorian-Gray-esque situation. We remain unwitting

followers of the cult of Narcissus, which not only sees itself and only itself in the abyss, but also attempts—even unconsciously—to turn the universe into an infinite projection of itself.

DOGMAS OF THE EXPERIENTIAL

It is a humanistic or subjectivist mistake—one that runs from Kant to Sellars—to limit the idea of the transcendental to experience, which ultimately reduces the transcendental to its mere application to sensory materials or sensible intuitions. Nowhere is this limitation more prominent than in Kant's elaboration of the pure concepts of the understanding, or categories, which are categories only in so far as they are abstractly bound to the I as that which thinks and experiences. In other words, categories are only of interest to the extent that they serve the experiential, epistemic, and practical needs of the subject. But in being restricted to the interests of the apperceptive I, categories cannot be adequately treated in their own terms—that is, they cannot be examined as what they are in themselves, as forms having a logical autonomy of their own. The immediate consequence of limiting the transcendental to the domain of experiential content and, correspondingly, to sensation as a necessary condition for experience, is the elision of the distinction between logical autonomy and practical autonomy, the pure autonomy of the formal (syntax and semantics) and the relative autonomy of the experiencing subject.

At the level of experiential content, mind has only a relative or conditioned autonomy at best. This is because experience is anchored in sensation and sensations are instantiated at the level of the causal—and when it comes to the domain of causes there is no absolute autonomy, if any at all. This is what led Sellars to compare the conceptualizing mind to a computer whose purported spontaneity or autonomy is shaken by the fact that it does nothing unless it receives an input, i.e., that it is predisposed to a foreign cause.[279] It is only in the presence of a foreign cause that the computer

279 'Consider a computer which embodies a certain logical program, a set of computational dispositions. Even if "turned on" and humming with readiness, it still does

can initiate its search and actions. Its autonomous activity is a register of its passivity in relation to an input qua foreign cause. The spontaneous activity of the mind—akin to the life-like whirring of a computer that has just received and reacted to an input—is set in motion by a causality which, even though it appears as the spontaneous causality of the conceptualizing mind, is in reality a causal routine whose causality is being caused, and thus is a causality of nature, where autonomy is at best relative or conditioned by pure heteronomy.

But the conclusions reached by this analogy are misleading to say the least. For even though the operation of the machine—receiving an input, initiating a search, and yielding an output—is merely a relative spontaneity, its so-called '*logical* disposition' has a formal or logical autonomy.[280] Foreign causes have no bearing on the logical dimension of the computer in terms of how—in accordance with the formal dimension of rules—it processes the input and provides an output. A computer has formal or logical autonomy but not spontaneity at the level of its operation, its wordly practice. Or, more precisely, it has autonomy at the level of logical operations *in themselves* but not at the level of the spontaneity of its actions. A program has logical autonomy to the extent that it is the subject to its formal rules or axiomatic bootstrapping.

Treating the formal or logical dimension of the computer as a *disposition* at best misses a point about what formal autonomy is, and at worst comes off as a linguistic sleight of hand. A programmable toaster certainly has no practical or agential autonomy—but agency is not everything. Although a programmable toaster lacks agential autonomy, it has logical autonomy at the level of its program pertaining to how to toast a piece of bread.

---

nothing unless a problem is "fed in". Furthermore, once this happens, it moves along in accordance with its logical disposition. At certain stages it may "search its memory bank". This search, however, is itself the outcome of the initial input and its computational development. And although, with this qualification, it "initiates" the "search", the information it gets is information which as computer, it is caused to have—i.e. more input. Here also it is passive.' Sellars, *In the Space of Reasons*, 428.

280 Ibid.

Even though the toaster has no agency or subjectivity, there is in principle no reason to doubt that a program could be written to enable a not-so-futuristic toaster to make not just better toast given any kind of bread (input), but toast that surpasses in every respect that made by a practical subject most adept in culinary skills.

Similarly, for the conceptualizing mind the true locus of spontaneity is not to be found in its perceptions and actions or in the contents of its thought episodes, but in the formal dimension of thinking, or in how language and logic handle such contents. Constraining meaning (semantic value) to the metaphysics of sensation as encapsulated in Sellars's theory of picturing is necessary for the epistemic traction of the formal dimension of thinking on the world or, more generally, the epistemic orientation of logical powers. But reducing, *in advance*, the function of formal to the epistemic content or application is a sure recipe for an impoverished view of both form and content, both logical powers pertaining to conceptual activities and their epistemic significance.[281] Not to mention that such a view inevitably becomes susceptible to strong psychologism—i.e., 'the attempt to establish the validity of logical principles by appeal to facts of human psychology'[282]—while, in virtue of refusing to engage with the question of the formal on its own autonomous ground, it has deprived itself of adequate resources to challenge the biasing effects of psychologism.

It is only by disengaging what is formal from subjective experiential content, the pure formal dimension of thought from its prima facie epistemic-experiential content, that the formal can be treated systematically. And it is only through the systematic—rather than empirical or epistemic—treatment of the formal dimension in its own terms that experiential content can be richly structured beyond the limited scope of nonconceptual representations.

---

281 '[T]he ultimate point of all the logical powers pertaining to conceptual activity in its epistemic orientation is to generate conceptual structures which as objects in nature stand in certain matter-of-factual relations to other objects in nature.' Sellars, *Essays in Philosophy and Its History*, 52.

282 P. Kitcher, *Kant's Transcendental Psychology* (Oxford: Oxford University Press, 1990), 9.

Formal languages express the systematicity of the formal—that is to say, the structural relations between formal aspects of language as decoupled from its communicative function, the experiential, and ordinary semantic content. However, in contrast to the traditional view of formalism, this disengagement from content does not make formal languages or formalisms meaningless, i.e., pure abstractions with arbitrary applications. As Krämer and Dutilh Novaes have elaborated,[283] the decoupling of formal languages from any subject matter or content (desemantification) conditions the possibility of resemantification or 'applying a given formalism, which is developed against a specific background, to a different problem, phenomenon, or framework'.[284] Accordingly, the systematic treatment of the formal—i.e. treating logical powers in terms of their own structure rather than their transitory experiential content or epistemic application—not only allows new contents to be structured and accessed (semantic enrichment), but also brings about a debiasing effect, in the sense that it strongly mitigates the perceptual biases of reasoning. It is the debiasing effect that makes of formal languages tools or cognitive technologies that enable the transition from the common-sense framework of understanding and knowing content to the scientific framework of epistemic inquiry.

It can always be objected that such an unfettered view of form completely dispenses with the sociocultural richness that is an intrinsic part of language as we know it. In response to such an objection, it should be answered that formal languages or formalism in general do not necessarily forgo the cultural accumulation of language. Saying that they do is in fact an unwarranted claim placing a priori limitations upon what forms can do and what capacities can be afforded by them. Such a claim implicitly presupposes that cultural accumulation and experiential richness are possible without the formal dimensions of language and thinking, and thus imparts a metaphysical reality to the cultural wealth of ordinary natural languages.

---

283 See S. Krämer, *Berechenbare Vernunft: Kalkül und Rationalismus im 17. Jahrhundert* (Berlin: Walter de Gruyter, 1991); and Dutilh Novaes, *Formal Languages in Logic*.

284 Dutilh Novaes, *Formal Languages in Logic*, 6.

Not to mention that such an objection is tacitly predicated on the idea that we can organize our encounters with the world with something other than form. But such a presupposition—expressed or not—is the very example of the myth of the given. The most caustic expression of the myth of the given or, more generally, the claim that our knowledge bottoms out in a noninferential qua foundational knowledge or immediate access to reality, is hidden in the assertion that forms should conform to experiences. To adopt Carnap's argument, objects of knowledge are of form, rather than experiential content, and as such they can be represented as structural entities. Considering objects of knowledge as objects of experiential content brings about a quandary: in so far as the material of streams of experience for an individual or between different individuals is divergent or even incomparable, we cannot make objectively valid statements about objects constituted by individual subjects. The only reason objects of knowledge are possible is that 'certain structural features agree of all streams of experience'.[285] Such structural features are indexed by and are objects of form, which secures objectivity in an intersubjectivity whose individual streams of experience are held together and structured by the dimension of form.

As argued above, however, the transition from the commonsense framework to the formal linguistic framework (the theoretical framework) is impossible unless logical autonomy is disengaged from agential/practical autonomy, and the formal dimension of thinking is understood as having a logical spontaneity of its own. It is this decoupling or disengagement of form from content that permits the systematic treatment of content through which reasoning about content is finally liberated from ordinary subjective intuitions and perceptual biases. For this reason, understanding the logical autonomy of the formal—freeing language and logic from the experiential-epistemic concerns of the subject—is not a formalistic caprice, an indulgence in meaninglessness, or something that results in an arbitrary epistemic relation to the world; it is the first step in attaining semantic consciousness: the realization of what one actually does when one thinks

285 R. Carnap, *The Logical Structure of the World*, tr. R. George (Chicago: Open Court, 2003), §66.

and speaks, as well as the recognition of what language does to its users once they partake in it.

UPWARD TO THE SEMANTIC HEAVENS

We have briefly surveyed the type of interaction the automata must engage in so as to genuinely count as speakers and reasoners and to have a language that confers meaning or semantic value upon their noises. As the final stage in our thought experiment, let us assume that our automata possess precisely this type of dialogical interaction, which gradually unfolds the inferential and logical powers of language. They are in possession of such linguistic (syntactic-semantic) interaction to the extent that language in its syntactic and semantic complexity evolves through their interactions via symbolic tokens—an interaction that progressively introduces logico-computational constraints on how such tokens can be exchanged or used. For now, the automata might have something like a protolanguage that does not exhibit the full range of conceptual activities or semantic complexity. But it is, in principle, inevitable that their interactions, via the logico-computational constraints of their protolanguage, will unfold a diverse range of syntactic and semantic features, different grades of concepts and inferential abilities, afforded by them. Language is not God-given: its complex syntactic and semantic aspects are not given in full at the time of its inception, but evolve through its use—that is, through an interaction that results in the development of new, more complex logico-computational behaviours; an interaction that is language itself.

Here the appellation 'language' does not necessarily refer to human natural languages, but to any artificial language with a syntax-semantics interface and support for the interaction of speech acts. In its general form, language is a vast generative framework that integrates the dynamic structure of interaction and the autonomous system of symbols. In creating a reinforcing connection between the computational powers of the former and the self-efficient codifying processes of the latter, language augments and diversifies the abilities afforded by each of them. In this sense, language can be seen as the source of limitless scenarios in which

logico-computational processes can act upon one another. The interactive framework of languages *harnesses* such processes, in the double sense of constraining them and mobilizing them toward functions with specialized logical and computational properties. Within this framework, not only are the users of language increasingly equipped with new cognitive technologies; they are also, more profoundly, formatted by the causal forces originating in the logical powers of language.

For now, the automata do not know exactly what language is doing to them. They are unaware of the fact that their dialogues and linguistic interactions, thoughts, and actions are implementing complex logical and computational behaviours; that in interacting with one another, in thinking, even privately, they are acting on behalf of the as yet unknown logico-computational phenomena and powers at work beneath the surface of their language. It is only with the increase in their conceptual abilities, concomitant with the evolution of their language and their mastery of it, that they will acquire the wherewithal to become aware of the logical structures and connections underlying their sayings and doings, their thoughts and actions, the ineliminable coextensivity and correlation between the know-thats and know-hows of their cognitions. This awareness qualifies as semantic self-consciousness. The process of achieving semantic self-consciousness—becoming aware of what one does when one thinks and acts—is the prerequisite for knowing how to think and act. But knowing *how* to think and act is the most fundamental requirement for concrete self-consciousness as a matter of practical achievement, i.e., *what* to think and what to do. There is no concrete self-consciousness without semantic self-consciousness. It is with the rise of semantic self-consciousness that the automata can make explicit the role of their interaction as a framework of semantic-cognitive enablement. When this role is brought to the foreground, they will be able to modify, improve, and diversify the syntactic and semantic structuring abilities that they have so far only implicitly and rudimentarily utilized to structure their encounters with the environment.

With the ingress of language into their universe, the automata's meta-awarenesses can finally take the form of beliefs, and hence can be endowed with epistemic valence provided they can be formed into assertable

propositional contents which can be scored or judged. Similarly, the nonconceptual representings (E_i^*–E_j^*s) of the automata are now caught up in the rule-governed web of language in which their relationships are *inferentially* articulated. The powers of inference afforded by language also, in this sense, find an epistemic orientation. They convey an implicit knowledge of matter-of-factual truths about the states of affairs of the universe that the automata inhabit. Yet these truths are only presumptive or plausible—their plausibility is a matter of where they fit within the coherentist network of inferential relations, or the conceptual order. Within the semantic or conceptual order, pattern-governed uniformities which the automata were previously blindly treating as a matter of certainty—but which were in fact weak causal-statistical inferences susceptible to arbitrariness—become a matter of plausibility or promising truths. In other words, perceived certainty is replaced by inferentially articulable plausibility or truth-candidacy as a hypothetical or abductive conception of truth which can be tested against both new observations and further claims.

Enabled by the semantic dimension of language, the transition from perceived certainty to conceived plausibility is what fuels epistemic inquiry—the will to know—since it disturbs the purported natural equilibrium of the given state of affairs by introducing rational suspicion qua conceptual plausibility and, correspondingly, implausibility, into the orders of thoughts and things. This is what Plato might have called the nebulous continuity between shadows or sensible images (*eikones*) and the intelligible reality—a continuity which, however, by no means signifies a flattening of the distinction between the two. And it is this rift or disequilibrium that sets off the involution of thinking—a critical gesture whereby the knowledge of the world expands by way of thinking's progressive realization of how it itself functions and knows. This involution is the power of determinate or critical negation as distilled in the activities of conceptual construction and the conceptual revision, formation, and reappraisal of beliefs.

Once consciousness is steeped in language, it does not just seek more of itself by virtue of having a conception of itself, but more importantly it acquires what Findlay calls a 'sidelong intentionality' in addition to

straightforward or direct intentionality (thoughts *about* this or that thing).[286] Conceptual consciousness spreads out beyond any particular limit set by a given world, in such a way that its intentionality is always the thought of many things at once *indirectly* and *implicitly*. Each direction may bear the marks of one or many noetic activities, inferences, and forms of judgement, from perceptual, recognitive, and predicative judgements to critical judgements, from simulation to classificatory functions to ampliative inference. Some directions may follow tracks of logical entailments, some 'logical tracks of less stringency',[287] and yet others tracks where the logical, empirical, and experiential are combined.

It is this *nisus* (mental effort, striving or cognitive tendency) toward being ever more conscious in every possible direction that transforms the world of the automata from a narrow zone of thinking and action to an unrestricted universe where the scope of thinking and knowing has no predetermined limit or boundary. The sidelong space of thinking is tantamount to a drift or an alienating cognitive-epistemic vector that pierces through any limited conception of a world or restricted universe of discourse. Driven by this drift, the automata are no longer mere creatures of behavioural interests and habits. They no longer encounter their world only through their attentional system. In other words, their encounters with the world are not limited to the immediate environment given by their perceptual-sensory system. Instead they have a *conception* of an unrestricted world in which possible worlds of thoughts and actions exist side by side with their given world (*welt*), previously treated as the totality of all there is. This is the most significant aspect of conceptual consciousness: it begets a world that is no longer limited to the supposed immediacy of the causal-sensory domain. Intelligence is that what which makes new worlds rather than merely inhabiting given worlds.

Just as conceptual consciousness tends to dirempt and drift toward variations, multiplicities, and the dissolution of the supposed boundaries of thought and action, it also has a *nisus* toward synthesis and integration.

286 Findlay, *Values and Intentions*, 75.

287 Ibid., 75.

The latter is defined by the tendency of conceptual consciousness not only to follow different tracks of thought fanning out in all directions, but also to work out the various relationships that obtain between such thoughts (consequence, incompatibility, or even equivalence relationships). These two concomitant tendencies are represented by Plato, in *Theaetetus*, in terms of the interplay between the determinate and the indeterminate. Functions of language and logoi are of *to peras*, determining that which is indeterminate (*to apeiron*). It is in having the capacity to integrate that which is purely diremptive that the automata can progressively structure their world by structuring their various thoughts and experiences of it, moving from disconnected and seemingly diverging representations of the world toward conceptual-theoretical world-representations or world-stories. This transition requires precisely the sort of structuring syntactic and semantic abilities listed earlier at the end of the previous chapter. It is obvious that our automata, as incipient thinkers and knowers, do not possess every single such ability at the outset. Climbing the ladder of semantic complexity and acquiring more complex structuring abilities is a matter of the communal development of thought, and a gradual acquaintance with practical know-how regarding what qualifies as good material and formal inferences and what practices-or-abilities are required to elaborate, combine, and map structuring syntactic and semantic abilities to one another.

Lastly, the metaphor of semantic or conceptual ascent corresponds with what André Carus—with a nod to the work of Carnap after *Aufbau* and the project of rational reconstruction—refers to as explication as the paradigm of the Enlightenment. Explication as semantic ascent is no longer an exclusive feature of natural language, but of language in general, with the appellation 'language' understood not as a given qua a natural language, but as the craft of an engineering mission, and a matter of rational choice, and thus the enrichment of the very concepts of reason and reality.

The dialectical task of explication is set between practical and theoretical concerns, the cognitive and the normative: To explicate is to ascend from vague concepts of ordinary language—the explicandum—to more precise and justifiably more useful and explicitly defined concepts i.e., the explicatum of what is couched loosely in a cluttered ordinary natural

language. Replacing the former with the latter coincides with the ideal of rational scientific Enlightenment. But this is Enlightenment in two different yet commensurable senses. Explication runs simultaneously along two parallel trajectories.

The first can be defined in terms of a descriptive pragmatics, in which we explicate our local concepts by refining them, reinventing them at progressively higher resolutions. For example, the concept of hardness, to use an engineering example, is a local perspectival—but not subjective—concept, since the concept behaves differently at different scale-lengths. At the macroscopic level, the hardness of a metal beam differs quite radically from the concept of hardness as it pertains to more fine-grained scale-lengths (e.g., crystal or nano levels). Explicating a local concept such as hardness, then, is equivalent to the scientific-heuristic task of providing increasingly refined but also diversified concepts of hardness for different levels and sectors of reality. This type of refinement, however, does not happen in an existing language where the concept of hardness is firmly stabilized and defined. It requires a change of language or, in other words, a move from the ordinary framework of natural language to the unbound realm of constructed languages. In this sense, the semantic value or meaning of hardness suggests both an internal and external semantic problem: Internal to the extent that the meaning of hardness_1 is defined in terms of the rules and inferences of language_1, but external to the extent that explicating hardness_1 entails an ascent from language_1 to $\text{language}_{2,3,\ldots}$—that is to say, to the ocean of general artificial languages where the choice of constructed language is a matter of pure theoretico-practical considerations, and the concepts hardness_2, hardness_3, etc. are explicatums of language_1 (hardness_1).

However, the first sense of explication as enlightenment, by itself, can only give us drifting diversifications without any hope of unity or integration. And this is where the second sense of explication as enlightenment enters the equation: We would not have even been in the position of arriving at the first sense, if we were not in the possession of explication as a universal or global trajectory. Moving from hardness_1 to hardness_2, and correspondingly from language_1 to language_2, already implicitly assumes an underlying explicatory gradient from a given language to a constructed

one, and therefore from a concept loosely defined in the former to a more refined (i.e., locally triangulated and context-sensitive) concept in the latter. Whereas the transition from hardness_1 to hardness_2 is an instance of the refinement of local concepts or the first sense of explication, the ascent from language_1 to constructed languages suggests that there is indeed a global conception of explication whereby we see the refinement of our local concepts as the direct consequence of how we replace our given naturally evolved languages with those which we build, and all the criteria of rational choice—with regard to theoretico-practical usefulness—that goes into such a choice. It in this sense that we can consider the notion of rational scientific Enlightenment initiated by Galileo and Copernicus, and up to the revolutions instigated by Kepler and Newton, Darwin and Einstein as the trajectory of a universal explication within which local explications are carried out and also ultimately integrated within one unified trajectory: that of advancing from a given natural language to engineered languages and concepts, from the manifest image—to appropriate Sellars's lexicon—to the scientific image.

Carnap's conceptual or language engineering, then, as Carus has elaborated, is not a clash or fusion between the manifest and scientific images. The ascent from ordinary language to an engineered one does not suggest the replacement of the former by the latter, or that we leave the notions of meaning and material inferences intact as if they belonged to a stable manifest image. To the contrary, the ascent from language_1 to constructed languages suggests that the relation between so-called manifest and scientific images is one of a positive feedback loop or an enrichment. The manifest image is not static, nor is the scientific image the ultimate replacement for the manifest. In the explicatory paradigm, the relation between the two is one of refinement, dynamicity, and the evolution of multiple trajectories. But more consequentially, as Carus observes, such a relation between the manifest and the scientific, language_1 and language_2, means that we are far from giving the conclusive conception of reason. Reason is dialectical, an engineering ideal. To settle for any concept of reason is to betray the idea of Enlightenment and, correspondingly, to fall back on either a purely

psychologistic idea or a scientific portrait whose elements and relations are underdetermined if not psychologically and unconsciously distorted.

MACHINES UNBOXED

With the advent of the semantic or conceptual order, the automata acquire not just an unrestricted conception of the world, but a revisable conception of themselves. It is in fact their conception of themselves in the world that grounds the *nisus* for their understanding or grasp of the world. In this sense, their self-conception mediates between what they take themselves to be in the world and what they actually are as denizens of the world, the order of oughts or norms and the order of what is. Conceptual consciousness is essentially a collective consciousness, since it intrinsically belongs to the deprivatized space of language and the conceptual order. Therefore, its self-conception is also implicated in the collective order where no self, thought, or experience can be conceived in privacy or separation from others.

Any consciousness that develops a conception of itself will increasingly come under the sway of rational norms and impersonal or collective values and disvalues. Primarily, these norms, values, and disvalues concern the questions of what to do and what to think. Once they have a conception of themselves, the automata's activities are dominated by questions of what we ought to do and what we ought to think given what we are—or more precisely, what we *conceive* ourselves *as*. Under the influence of such norms as objective principles (rather than as social conventions), their rudimentary multi-agent framework of interaction is refashioned into an explicit social community that can be steered in one direction or another, modified, or rebuilt. In this new social microcosm, oughts are routinely assessed, kept, and improved, or discarded if necessary.

As norms qua objective principles of thinkings and doings accumulate, the interplay between 'what *is* the case' and 'what *ought to* be' takes a new slant. It becomes a matter of dovetailing the intelligibility of things and the intelligibility of practices into an embodiment of intelligence that is invested in the intelligibility of its actions to the extent that it has a conception of how it ought to be and what is fitting for it. Inasmuch as