1. THE BLACK BOX OF TERATOLOGY

Now a stock figure of genre horror and science fiction, the “mad scientist” is most commonly regarded as a figure of moral caution. In its early instantiations (*The Island of Dr. Moreau*) the mad scientist is at once a scientific and theological figure, rationalizing method by referencing science (e.g. animal physiology, Darwinian evolution) and, at the same time, occupying the role of Divine Creator (a role that is also a Divine Sovereign). We are readily familiar with the stock elements of the mad scientist story in popular film – the crazed, disheveled appearance of the mad scientist himself (most often a “him”), the bells-and-whistles of the high-tech laboratory (usually in a tower or basement, and replete with Tesla coils), and of course the aberrant creature that is the result of the mad scientist’s extremist theological-scientific vision.

But aside from the kitschy set design or the highbrow ideologies represented in such stories, we should also pay attention to the materiality of the mad scientist, to what the mad scientist actually does. For instance, there is always a black box in the laboratory, one that the mad scientist has created. This black box may be an operation table (e.g. the classic Universal Pictures version of *Frankenstein*), a submersion tank (the Hammer Studios version of *Frankenstein*), or an isolation chamber (e.g. *Altered States*). This black box serves a number of functions. It is literally a point of mediation between the natural world and the unnatural or post-natural world of the monster that is created within it. While the black box is visually and conceptually saturated in science and technology, it is also the liminal space where something mysterious and unknown happens – the production of previously unseen forms of life, the ontogenesis of “life itself.” This fuzzy notion of life itself is that which remains forever beyond the pale of human understanding, but what can only be intuited via the individuated – and anomalous – form of life produced in the black box. One is almost tempted to say that, within the mad scientist’s black box, a new type of negative theology is produced, one built upon and reliant on a techno-scientific rationality.

A case in point is the two film versions of *The Fly*, the first from 1958 (directed by Kurt Neumann), and the
second version from 1986 (directed by David Cronenberg). In both versions, enclosed “pods” serve as the black box. Something natural and familiar goes in, and something unnatural and unfamiliar comes out. The story of *The Fly* is also interesting because it introduces chance and the accident into the creation of the monster – that is, the monster is created not through the hubris of the mad scientist, but through the anomalous event, the aberration that comes of chance and the anonymity of the chance encounter. What goes in the black box – a human being, a fly – is quite different from what comes out. In the 1958 version we see a sort of mereological assemblage: human body with an insectoid claw and massive “bug eyes.” In the 1986 version something more amorphous is presented in stages, almost like a clinical case study: useless body parts slough off while new structures emerge. In both versions, however, the black box serves as a kind of allegory of individuation. At once engineered and yet completely mysterious, the black box of individuation functions as a crucial link between the life that is already known and the life that is unknown (or not-yet-known).

2. THE TRAGEDY OF THE INDIVIDUAL

These sorts of issues – individuation, morphology, and the ontogenesis of life – are at the heart of Alberto Toscano’s *The Theatre of Production*. Arguably, Toscano’s book is part of an emerging naturphilosophie that brings together the approaches of speculative philosophy, contemporary science studies, and a range of political issues broadly included under the rubric of biopolitics. At the core of *The Theatre of Production* is the concept of individuation, and in particular the ways that individuation cannot be separated from a critical interrogation of the concept of life. As Toscano notes, this biophilosophical concern not only bears upon the life sciences proper, but it also raises a host of questions that are political-ontological questions: questions of production, of materiality, of norms and the anomalous.

*The Theatre of Production* is broadly organized in three parts. The first part deals with the traditional or classical concept of individuation from Aristotle up to Kant. Here the key conceptual lens is that of Being and Becoming. In the second part of the book, Toscano focuses on the problematic of individuation in Kant, as well as its critique in the work of Schelling and Nietzsche, with a look ahead to autopoiesis. This is what Toscano calls the “genetic modality of individuation,” where the primary concern is the distinction between autonomous (self-causing) and heteronomous (other-causing) modes of individuation. This paves the way for the book’s third and final section, which examines the work of a number of thinkers, including James, Pierce, Ravaisson, and Whitehead, with a nod to recent developmental systems theory. However its main focus is on the development of individuation in the thought of Simondon and Deleuze. This culminates in what Toscano terms an “ontology of anomalous individuation,” a concept of individuation that does not proceed from pre-established principles, but that itself conditions the autonomous-heteronomous split. This is, in short, the development of an unconditioned individuation, an “anarchic” mode of individuation. Here Toscano paraphrases Simondon: to understand individuals through individuation, rather than understanding individuation through individuals.

In its most abbreviated form, the problem of individuation poses the question: how is it that this entity exists, and not any other kind of entity? Note that this is different from the purely ontological, Leibnizian question (“why is there something and not nothing?”). In its very formulation, the question of individuation bypasses the metaphysical question and shifts its terms: the issue is not why there is existence, but rather how something exists. The problem, as Toscano notes, is that this must then presume something non-individuated that pre-exists, as well as some resultant individual that is a product, and produced from the pre-existent.

Hence the primary conceptual challenge that runs through *The Theatre of Production*: is it possible to think the genesis of the new without recourse to either pre-existing principles or pre-determined ends? Put another way: what would be required of thought in order to think ontogenesis without falling back onto either mysticism (an unknowable, pre-existent, background) or naïve empiricism (the strictly observable, evidential proof of hindsight)? As Toscano notes, this dilemma is expressed in embryonic form in Aristotle, who splits the problem of individuation along “genetic” and “epistemic” lines, the former dealing with natural philosophy and generation, and the latter dealing with logic and the analytic of concepts. While Scholasticism will further
refine this split (for instance, in Duns Scotus’ notion of *haecceitas*), it will be to Kant to crystallize the problem of individuation as it is manifest in the “paradoxical object” of the living organism.

Toscano’s elaboration of the Kantian problematic of individuation stands as one of the strongest parts of his book. Though Toscano spends equal time on thinkers such as Simondon and Deleuze, I would like to spend some time going over these sections on Kant. This is, in part, because in Toscano’s genealogy it is Kant who establishes the horizon for thinking individuation. It is also because both Simondon and Deleuze reconstitute the problematic is new, post-Kantian ways – never fully doing away with the remnants of Kantianism in their thinking. Additionally, it is with Kant that the concept of individuation comes to be intimately tied with the philosophy of nature and in particular the organism as living being. In the *Critique of Judgment*, as in his lectures on natural philosophy, Kant meditates at length of the paradoxical status of the organism. For Kant, organisms bear a problematic relation to teleology: on the one hand, they are organized in ways that evidence a drive towards particular ends, but, on the other hand, such ends are neither apparent in the organism itself nor in any external cause. Kant takes it for granted that neither mechanism nor vitalism is adequate to explain this propensity of organisms. While mechanism offers a system and set of causal relations, it cannot account for the generation and adaptation of the living as such. Conversely, while vitalism does focus on the processes of life, it offers little in the way of causal explanation, except by resource of a quasi-mystical life force. In these views, individuation is structured along fairly traditional lines: there is some non-individuated state or substance, an activity of individuation, and the individual that is the product of that activity. The individual is the foreground, while the non-individuated is the background, with the activity of individuation asymmetrically mediating between background and foreground. Both mechanism and vitalism are united, then, in ultimately requiring some immaterial principle of individuation (efficient causality in mechanism, final causality in vitalism).

The interesting, albeit brief, move that Kant makes is to consider a synthesis between the two views. What if the apparent teleology of the organism is also its system of causal relations? One would then have to shift from a view of external, heteronomous causality to an internal, autonomous causality; that is, towards a *self-organization* of the organism. But, as Toscano notes, just as quickly as Kant puts forth this idea, he withdraws it, in part because such a concept can only be evidentiary: it can only be given in the evidence of singular experience, apart from an *a priori* given that would condition and ground all possible experience of the world. Hence the problem is that individuation – the individuation of individuals – seems to require a minimal distinction between a sort of background chaos that is the reservoir of all individuation (and individuals), and some causal principle by which the individual emerges as an individual. As Toscano observes, the idea of self-organization disrupts this paradigm:

> The concept of self-organization is rendered unintelligible once the organizing and the organized, the individuating and the individuated, are separated by the disjunction between formative life, a mysterious force working by analogy with the power of desire, and inert matter, which receives its systemic structure from the activity of what Kant will refer to as an immaterial principle (48).

In the Kantian framework, one is caught between a necessary disjunction between individuation and the individual, and an equally necessary conjunction. The key element here is, of course, that of the process or the mediation of individuation itself. Interestingly, Toscano notes that in the *Opus Postumum*, Kant will infrequently call this process or mediation *Lebenskraft*.

As Kant’s exemplar of the individual, the organism and its organization are at once manifest in itself and yet can only ever be the product of experience. As Toscano notes, “[i]ndividuals, considered here under the heading of ‘evidence,’ thereby constitute what can be given in experience alone…The paradox, of course, is that one is forced to think the organism, insofar as its evidence is such as to show up the lack and limitation of an a priori legislation. The latter is not simply incapable of anticipating the form of the organism…but cannot even formulate its possibility” (31). As Toscano concludes, in the Kantian framework “[t]here is nothing in the conditions for the possibility of experience…that is capable of providing a proper foundation for the
appearance of self-organizing individuals" (30; italics removed).

With this in mind, Toscano sets out to delineate different attempts to resolve the Kantian challenge. At the outset Toscano lays bare his ontological commitments: a “thesis of ontological excess” (Being is both more than and less than One; it is preindividual and problematic); a “thesis of asymmetry” (an ontology of individuation is an ontology of production); and a “thesis of anomalous or an-archic individuation” (individuation is ontologically prior to individuals). With these broadly Deleuzian theses in mind, Toscano goes on to show how a range of thinkers after Kant attempt to move beyond the Kantian stalemate. In Nietzsche’s early writings, Toscano detects an interest in a nonhuman, materialist mode of individuation (“materiality without matter”) that leads him to break from Schopenhauer, and post a generative and infinitely productive Wille. With Whitehead, Toscano highlights a thoroughly relational and “interactionist” mode of individuation, poised almost point-for-point against Kant. Such views lead Toscano to articulate one type of post-Kantian individuation, one that inverts Kant and leads to the idea of generative multiplicities – each multiplicity is an individual for another multiplicity, and so on, “all the way down.”

Another set of thinkers provides Toscano with a further stage in the post-Kantian theory of individuation. The concept of “habit” stresses the distinction between habit as repetition and habit as clarification or crystallization. Whereas the former notion implies that habit prevents individuation, the latter notion suggests the reverse. With Ravaisson habit is the psycho-biological interplay between repetition and spontaneity. With James the individual is constituted as a psycho-social “bundle of habits.” And with Pierce habit enters a more cosmogonic domain, in which habit is the canalization that produces new regularities. All of these point to a new approach to individuation. Whereas the prior examples (Nietzsche, Whitehead) operate an inversion of the Kantian paradigm, the examples of habit question the constitution of the very split between non-individuated and individuated. This paves the way for an engagement with the concept of the preindividual, a central concern for both Simondon and Deleuze.

For Toscano, it is with Simondon that the idea of the preindividual comes to the fore. This is, in part, due to Simondon’s approach (to know the individual through individuation, rather than knowing individuation through the individual). In this Nietzschean approach, Simondon will begin to understand relation itself not as a relation between pre-established (pre-individuated) terms, but as the constitution of individuation itself. Simondon’s preindividual is difficult to articulate. It is metastable, a non-state irreducible to individuality. It is also fragile, formed of incompatible tensions and potentialities (“disparation”). Finally, it is deeply processual, such that modifications on one side of any relation effectuate modifications on the other (“transduction”). Toscano shows how there are a number of resonances between Simondon’s theories and current developmental systems theory, based primarily on their use of the term “information.” However, as Toscano notes, for Simondon information is a tricky concept. It is certainly different from its usage in cybernetics and information theory, where it functions as a discrete entity carried along a channel. For Simondon, this is to be distinguished from a notion of information that itself constitutes the entire system of sender, receiver, message, and channel (this is what Simondon calls “first information”). In short, information is the ontogenic production of the system itself, rather than that which is produced within that system.

Such ideas lead Toscano to an engagement with Deleuze. Here Toscano introduces the concept of “anomalous individuation,” paying close attention to the way that Deleuze’s most central concepts – difference and differentiation, multiplicity, and haecceity – inform his approach to individuation. For Toscano, Deleuze’s primary challenge is not so different from that encountered by Kant: how to think a mode of internal differentiation that is neither a mystical, undifferentiated non-individual, nor a set of preconstituted principles of individuals? Toscano notes a shift within Deleuze’s attempt to answer this question. There is, first, an emphasis on structure, which Toscano encapsulates with the phrase “static genesis.” Here Deleuze posits a preindividual field that is at once material and transcendental, the being specific to a “non-empirical real.” But this encounters some obstacles, as the preindividual seems caught between being predetermined and undetermined (what Toscano calls the “sufficiency of the virtual”). This leads to a second approach Deleuze makes, which deals with...
temporality and rhythm. Here Deleuze’s emphasis on haecceity (the longitudinal axis of speed and slowness, the latitudinal axis of affecting and affected), derived as much from Spinoza as from Duns Scotus, comes in to oppose any theory of essences whatsoever. Toscano sees this not as the establishment of a system, but as a “dramatization of ideas” (hence his title of the book). In this drama of individuation, Toscano’s notes a shift in Deleuze’s work from a minimal distinction within individuation (actual/virtual; haecceity/univocity) to an affirmation of an ontological flattening of such terms. And, while Toscano spends time discussing diversions from Deleuze’s work (the “functionalism” of Delanda, the erasure of individuation in Badiou’s critique), the emphasis remains on the shift Deleuze effects from the Kantian preoccupation with organization (individuals over individuation), to the Deleuzian concern with composition (individuation over individuals).

3. THE LIFECRAFT OF HETEROGENESIS

The Theatre of Production offers a conceptual genealogy of the concept of individuation, both in its traditional and Kantian guises, as well as in the various post-Kantian attempts to rethink it. It is also unique in that it specifies what is at issue in the cluster of thinkers and texts that are often vaguely termed biophilosophy. While it is no surprise to find Kant at the center of this debate, Toscano also encourages a wider reading beyond natural philosophy or the philosophy of biology. This is perhaps the strongest line that runs throughout The Theatre of Production: that the “bio” of biophilosophy has little to do with biology per se, and equally little to do with time and temporality (a preoccupation with much biopolitical thinking today). Instead, the “bio” of biophilosophy deals with the paradoxical object of the living being that Kant describes early on.

By way of extending Toscano’s study, we can briefly lay out some of the key elements for any biophilosophy today. There is, first, the issue of genesis, or the passage from non-being into being (autogenesis, the self-creating of the self, and heterogenesis, the differential creation of the different). This leads to the issue of emergence, or the distinction between foreground and background (emergence of a foreground as discrete or continuous, as determinable or spontaneous). This in turn leads to the issue of morphology, the forming and deforming that characterizes individuation as a process (from one metastability to another, from form as crystallization to form as diversion or disaggregation). Finally, this opens onto the issue of scaling, or the shifts between the terms of the One, the Multiple, and multiplicity (individuation as the middle term between multiplicities; the problem of causality in a multiplicity of individuations).

Given the genealogy laid out by Toscano, there are a number of issues to further consider. I will mention just one, and that is the concept of the preindividual. This concept already seemed necessary for Kant (though Kant is reluctant to posit it), and it leads to the Kantian question: what are the criteria for the individuation of individuals? Kant seems to be stuck having to posit a background of preindividual flux (which in the later lectures come to be called “the ether”), against which the foregrounding of individuals occurs. At this point, however, the individuation of individuals tends to recede behind a mystical fog of blind chance (mechanism) or divine gift (vitalism). The only way out of this is to entertain the idea of autonomous individuation (what Toscano calls “anomalous”). But such a concept of self-organization ends up throwing out some of the basic elements of Kant’s edifice: the a priori and the a posteriori, efficient and final causality, organization and teleology, and so forth.

As Toscano paraphrases it, Simondon’s version of the preindividual is not simply something that one back- posits from an already-individuated case. “Unlike a structured grid of possibilities…prefiguring or determining the individuations that draw their norm from it, a preindividual field is constituted as a determinable domain, in which differences and incompatibilities function as the potentials that a germ of information can resolve and modulate” (155). But at the same time that the preindividual is not totally determined or totalized, neither is it simply a kind of Neoplatonic flux and flow: “A preindividual field is thus not to be considered as a creative reservoir of phenomena or an unlimited source of givenness but as a real condition of individuation” (ibid.). In thinking the preindividual, one ceaselessly toggles back and forth between poles – determinable but not determined, productive but not creative, univocal but not One. Toscano, via Deleuze, attempts to massage
this back-and-forth quality by suggesting that there is not simply one preindividual field, but a plurality of preindividual fields – “determinable energetic and material conditions modulated by events of information” (ibid.). Despite this, it is sometimes difficult to see how the preindividual could be anything but a kind of metonym for a notion of life as pure generosity, gift, and flowing-forth. Certainly, in the hands of Simondon and Deleuze, one “subtracts” the divine, transcendent source or center from this generosity, but this then leaves us with the immanent generosity of the field itself – an empty gift. But even if one grants the more articulate, systems-based language of Simondon (and Delanda), individuation still presupposes this shift from an ontological question (“why is there something and not nothing?”) to an ontogenetic question (“why is there this thing and not some other thing?”; “why is there always something new?”). Individuation – along with the preindividual field – seems to necessitate some sort of principle of generosity, life viewed as germinal and creative. There is always more, and it is always different – more to come, more on its way, more than you realize. Perhaps it is this last type of generosity – more than you realize, the “weird” given – that best describes the limits of biophilosophy thinking today. In a way, we return to the question of the monster and the mad scientist’s black box. This is the question of teratology, or the anonymous, unforeseen individuation. Perhaps ironically, we would have to think of individuation, and life-as-individuation, in terms of natural theology, though of the “negative” sort… ■