

From Disembodied Soul to Embodied Mind

Human reason has the peculiar fate in one species of its cognitions that it is burdened with questions that it cannot dismiss . . . but which it also cannot answer. . . . Reason falls into this embarrassment through no fault of its own.

—Immanuel Kant, *Critique of Pure Reason*¹

In 1687, Isaac Newton published *Mathematical Principles of Natural Philosophy* with the financial assistance of his admiring colleague, Edmund Halley. The original publication includes an ode to Newton written by Halley himself, announcing the cultural and historical significance of Newton's discoveries:

Matters that vexed the minds of ancient seers,
And for our learned doctors often led
To loud and vain contention, now are seen
In reason's light, the cloud of ignorance
Dispelled at last by science. Those on whom
Delusion cast its gloomy pall of doubt,
Upborne now on the wings that genius lends,
May penetrate the mansions of the gods,
And scale the heights of heaven, O mortal men
Arise!²

Halley depicts Newton as a Promethean figure, soaring on the wings of genius above the miasmas of superstition that hitherto cloaked the mind of

God. He envisions a generation inspired by the light of reason brought to bear on the world by discoveries that will empower the formerly ignorant to “*Discern the changeless order of the world, and all the eons of its history.*”³

According to Halley, Newton’s genius lies in two distinct features: his discovery of this “changeless order” and his ability to communicate this discovery to the general public. These grandiose claims notwithstanding, less than fifty years after the publication of *Mathematical Principles* scientists conducting research in the life sciences began to see a critical flaw in Newton’s work. The basic assumption guiding Newton’s project was that the demonstrative, mathematical paradigm of knowledge provides the standard for the sciences. In order to adhere to this standard, Newton outlines a mechanical concept of nature in which active forces press upon inert matter. His third law of motion—“to every action there is always opposed an equal reaction”⁴—presumes a concept of nature that can be wholly explained in the paradigm of efficient causation, for every natural event is deemed to have a necessary and sufficient cause. Yet as the development of optical technologies made it possible to observe organic life on a cellular level, biologists were able to study the fertilization and early growth of seeds and eggs. They were faced with the task of explaining how individual parts within a single cell could form independently of each other and yet somehow cohere as an organic unity. While some responded by strengthening Newton’s mechanical view of nature by developing the idea of “molds” that press preestablished form upon inert matter, others began to search for an idea of matter capable of giving form to itself. This organic concept of matter stands radically opposed to Newton’s mechanical view; it rejects a dualism between matter and force by attributing motion to matter itself. It entails that the “form” or “law” of an organism does not preexist its development or press upon it as an exterior power. Rather, it is expressed through the organism’s constituent parts.

This self-forming concept of nature stands in tension with Newtonian physics, for it entails that organic events are contingent; they have necessary but not sufficient conditions of existence. If we begin from the contingency of organic events, then we require an alternative mode of explanation to Newton’s. Organic events cannot be fully explained through efficient causality, which explains change or movement according to the external conditions that act upon an object. Rather, they express an end toward which they are directed, requiring the explanatory paradigm of final causation, which opens scientific inquiry to matters of will and purpose. If providing an explanation for organic genesis requires a self-forming concept of nature, then the task

of the life scientist would not be to provide a “changeless” system of natural phenomena that can explain “all the eons of [natural] history,” as Halley put it. Rather, the life scientist’s task would be to give account of singular organisms through a process of codetermination wherein both observer and observed are dynamically involved, the observed expressing form for which the observer seeks to give account. This approach rejects the notion of science as the construction of a complete system that we find in Newton’s natural philosophy and recasts the scientific endeavor as an open project. Such a project requires a sensuous kind of thinking whereby the observer searches for a principle adequate to the phenomenon under observation. This mode of thinking would be both sensuous *and* rational, for it would search for form within nature as experienced through the senses.

The aim of this chapter is to show that in the midst of the collision between the rationalist concept of nature inherited by philosophy and the organic concept of nature emerging in the life sciences, poets and philosophers employed the language and form of tragedy in order to express the inner tensions of this experience. Genius ceases to be modeled on natural scientists such as Newton, who boldly discover the changeless order of nature. Instead, it is modeled on poets such as the ancient tragedians, who use the seemingly changeless order of nature to express natural spontaneity. Through identifying the importance of tragedy for navigating this transition, I aim to show that tragedy did not first appear as a significant matter of philosophical discourse in post-Kantian philosophy, as the Idealist view suggests. Rather, it returns during the mid-eighteenth century in the work of philosophers and poets as a way of framing the tension between traditional philosophy and the experience of nature as a domain of radical singularity.

Before I begin, it is necessary to situate the renewed interest in tragedy in the mid-eighteenth century in the context of a broader reconsideration of Aristotle’s practical and rhetorical texts, such as *Nicomachean Ethics*, *Rhetoric*, and *Poetics*. In these texts, one of Aristotle’s primary concerns is to distinguish between two spheres of human thinking and to map out the appropriate use of reason in each sphere. In book 6 of *Nicomachean Ethics*, for example, Aristotle states that theoretical thinking (*theoretike dianoia*) deals with “things that cannot be other than they are,” such as mathematics and geometry. Practical thinking (*praktike dianoia*), on the other hand, is the principled way of dealing with “things that admit of being other than they are,” such as nature, politics, and art.⁵ Both forms of thinking are

concerned with distinguishing truth from falsity, though the authority of practical thinking is limited to action.

Having mapped out the appropriate domain of practical thinking in terms of contingency, Aristotle then makes a finer distinction between two ways that action is guided by reason, *techne* and *phronesis*. First, he defines *techne* as the “reasoned state of capacity to make.”⁶ The mode of activity distinct to *techne* is *poiesis*. Thus, *techne* is productive, expressing the kind of knowledge possessed by the craftsman who understands the principles (*logoi, aitiai*) underlying the production of an object, such as a house, a table, or the state of being healthy. The technician acts upon his object in the paradigm of efficient causation: the material (*hule*) gives the maker something to work on, the form (*eidos*) is realized in the material, and the end (*telos*) is the realized form. The principles that govern the production of an object are teachable, reliable, and certifiable. Thus *techne* is interested, for it is subservient to a set of principles appropriate to achieving a preestablished end. Aristotle defines *phronesis*, on the other hand, as the “reasoned state of capacity to act.” It is characteristic of a person who knows how to live well (*eu zen*) in contexts that do not adhere to principles that can be known in advance. The form of activity distinct to *phronesis* is *praxis*, which does not make something with a given end in view, as does *poiesis*. Rather, it “is itself an end”; “good action” is the end of *phronesis*.⁷ The teleological dimension of *phronesis* entails that it does not produce something in the paradigm of efficient causation, where events have necessary and sufficient causes. Rather, it produces according to final causation, which involves the deliberation of a purposive subject. In this sense *phronesis* is not governed by principles that are teachable or reliable in general cases. Rather, it is concerned “with the ultimate particular fact, since the thing to be done is of this nature.” The attention *phronesis* gives to singularity entails that it is the kind of knowledge appropriate for living things, such as the *polis*. “Technical” considerations are thus contrasted with “political” considerations, just as making a table is contrasted with political action. A table is judged as an artifact, that is, without references to the motivations of the craftsman. A political act, on the other hand, is judged as an action, meaning that it cannot be evaluated apart from the aims of the citizen.

During the eighteenth century, philosophers and scientists became increasingly dissatisfied with the rationalist model of practical thinking, which grants *techne* an unrestricted authority over contingent matters. They turned to Aristotle’s separation of *phronesis* from *techne* for an alternative way to schematize the use of reason in practical matters. By separating cases

in which the subject matter adheres to principles that are teachable, reliable, and certifiable from cases in which the subject matter is, by nature, underdetermined, Aristotle was seen to outline a reasoned way of thinking in regard to self-forming organisms. In the search for a new mode of practical thinking attuned to the singularity of organic life, such philosophers not only challenged the rationalist separation of reason from sensation, they also renewed philosophy's concern with tragedy.

The problem of life

The tension in modern thought between the rationalist understanding of nature and the empirical sciences can be seen as the collision of a traditional system with novel demands, or, in the language of tragedy, a clash between old gods and new. To understand the origins of this tension, we begin with medieval philosophy. Broadly speaking, medieval philosophers concerned with the empirical dimensions of experience, such as science and art, drew from Neoplatonic resources, particularly from the transcendental principle of beauty. One of the central texts of Neoplatonism, Plato's *Timaeus*, articulates a rational, mathematical cosmology. By upholding mathematics as the foundational principle of order, Neoplatonism imagines the world as, in Umberto Eco's words, something "endowed with artistic order and resplendent with beauty."⁸ The creative act of the demiurge does not proceed in the form of creation *ex nihilo* but as a mode of production through which he imitates the higher, eternal world of form in order to shape the lower, material world. Thus understood, our sensory knowledge of the lower world and our experience of beauty are only complete when we recognize the higher form in which empirical objects participate.

Thomas Aquinas presents a Neoplatonic view of creation in *Commentary on Divine Names*. He states that beauty is "a participation in the first cause, which makes all things beautiful. So that the beauty of creatures is simply a likeness of the divine beauty in which things participate."⁹ In Aquinas' view, beautiful objects are produced according to predefined laws that allow them to participate in a beauty identified with Being itself. They are produced by nature according to necessary and sufficient principles, meaning that the beauty we experience in works produced by human skill involves the representation of preestablished form. The beautiful is a First Principle, an original harmony from which all things derive. Thus Aquinas can state that everything "that exists comes from beauty and goodness (from

God) as an effective principle. And things have their being in beauty and goodness as if in a principle that preserves and maintains.”¹⁰

Aquinas’ understanding of beauty as an effective principle builds not only from Neoplatonic sources but also from the speculative systems of Aristotle’s *Metaphysics* and *Physics*. Carol Poster describes Aquinas’ reading of Aristotle as a “scientific-technical” approach, for it prioritizes his speculative metaphysics over his account of practical and ethical subjects.¹¹ The dominance of the scientific-technical reading of Aristotle in medieval thought is reflected in the fact that his rhetorical and practical texts did not feature in medieval handbooks of the arts curriculum, and that neither *Rhetoric* nor *Poetics* were printed in the original five-volume Aldine Aristotle (1495–1498).¹² The absence of Greek tragedy in the Latin west meant that Aristotle’s *Poetics* found little purchase on the medieval imagination, while the poetics of Islamic philosopher Averroës, which outlined a writing pedagogy that addressed poetry and prose together, were more easily assimilated into medieval cultural life.¹³

Aquinas’ scientific-technical reading of Aristotle plays a central role in establishing the priority of Aristotle’s technical account of practical knowledge in modern philosophy, for it collapses the distinction between making (*poiesis*) and acting (*praxis*). The mode of practical knowledge that produces a world according to an efficient principle (a preestablished rule) is *techne*. Moreover, the mode of practical knowledge appropriate to human agents is also one of *techne*, for it requires the application of principles that participate in the original principle. Thus understood, the creative dimension that Aristotle ascribed to *praxis* is collapsed into *poiesis*, and action is understood as a form of production. This collapse is evident in medieval Latin, which renders both *poiesis* and *praxis* as *actio*.¹⁴ Aquinas does distinguish two kinds of action, one pertaining to production and one to action *qua* action. Yet his distinction, as Bernard Lonergan notes, is between “the *actio* of moral conduct, which is a perfection of the agent, and the *actio*, more properly *factio*, which transforms external matter.”¹⁵ Aquinas’ translation of *praxis* as *factio* ascribes “actions done” to the same framework as “things made,” thereby ascribing to *praxis* the same process by which a thing is produced. In this technical definition, action is a mode of fabrication, meaning that the practical sphere is understood as a technical sphere in which preestablished moral principles are applied to human behavior. In Aquinas’ words, “action implies nothing more than order of origin, in so far as action proceeds from some cause or principle to what is from that principle.”¹⁶ Action is not conceived of as the result of a process of deliberation but as *techne*,

which means that it originates from a cause or principle that provides the necessary and sufficient conditions for its being.

Understanding action wholly in terms of *techne* expresses what Dewey describes as the technalized imagination. Dewey argues that the technalized imagination buffers the two variables involved in thinking—the agent and that which is acted on—from one another. Ideas are separated from the agent, and the task of the practical use of reason becomes that of legislating action according to universal laws. In this framework, mind is separate from body, meaning that action is pure, stemming from a single intention located in the agent. Action is not an end in itself but rather an artifact, the realization of a pre-given end in the material order. The temporality of action is thus a problem, for the coexistence of cause, action, and effect in the moment of deliberation in Aristotle's *praxis* must be replaced with a model where action takes place after the cause (i.e., as a result of some rule) but before the presence of the effect.¹⁷

More than four centuries after Aquinas, René Descartes presents a scientific-technical reading of Aristotle in *The Principles of Philosophy* (1644). Echoing Aquinas' argument in the *Summa Theologica* that in "the natural order, perfection comes before imperfection,"¹⁸ Descartes argues that the natural order is grounded in original perfection: "I do not doubt that the world was created in the beginning with all the perfection which it now possesses, because, taking into account the omnipotence of God, we must believe that everything He created was perfect in every way."¹⁹ Descartes' natural theology reproduces Aquinas' notion of original perfection, thereby providing a mechanistic explanation of a nature that unfolds according to a First Principle. This explanation requires no reference to teleology. It does not, however, entail that appeals to teleology are unhelpful. He continues by saying that teleology can better explain the development of living things than appeals to original design: to understand the "nature of plants or men it is better by far to consider how they can gradually grow from seeds than how they were created by God in the very beginning of the world."²⁰ The natural scientific approach to nature is not incompatible with original design, for Descartes, for both presume the existence of predefined laws laid down by an original creator.

Descartes finds no contradiction in providing two different explanations of the same facts, one that involves theoretical knowledge of the original cause (God's original act of creation) and one that begins with the senses, for, like Aquinas, he understands the natural order in terms of the First Principle. While theology claims access to the First Principle, natural

philosophy *observes* the emergence of the First Principle in the material order. The task of natural philosophy, however, is not simply to describe this process of emergence but to find “several principles which are quite intelligible and quite simple” that might explain how an original seed or First Principle causes the appearances gathered by the senses, that is, to locate in our sensory experience of nature clear and distinct principles.²¹ It is precisely these principles that Newton attempts to lay down in *Mathematical Principles of Natural Philosophy*, principles that outline the mathematics of causality in order to explain the behavior of all natural phenomena.

For Leibniz, however, Descartes’ causal conception of nature and ends restricts God’s gracious care for the creation, casting God as a divine watchmaker who creates once and for all in a similar way to Plato’s demiurge. According to Leibniz, the problematic nature of Descartes’ conception of nature is manifest in his inability to harmonize mind and body. By rendering mind as *res cogitans* and body as *res extensa*, Descartes requires a mechanical explanation of how the two substances can interact. For mind to interact with matter, it must somehow enter the realm of causation (via the pineal gland), thereby submitting to the causal limits of nature. Thus God’s gracious care for God’s creation must submit to the order determined by mechanical philosophy. The kingdom of grace is subordinated to the kingdom of law to ensure the clarity and distinction of our ideas of nature.

Leibniz was critical of the subordinate position of grace in Descartes’ solution. Thus he put forward an alternative position that identifies a preestablished harmony of mind and body, separating spirit and flesh so that the two modes of explanation—nature and grace—could coexist harmoniously. In §79 of *Monadology* (1714) he states that souls act “according to the laws of final causes,” while bodies act “according to the laws of efficient causes or of motions.”²² While two kingdoms remain eternally separated, they are “in harmony with each other.” For Leibniz, the mind or soul operates according to particular ends that are explainable in terms of final causation, while the actions of the body, instances of matter in motion according to the claims of mechanical philosophy, are explained in terms of efficient causation. Though this is “impossible,” for souls act as if there were no bodies and bodies as if there were no souls, “both act *as if* each influenced the other.”²³

By separating soul and body into two realms, Leibniz allows natural philosophy to use both efficient and final causation as harmonious, albeit contradictory, forms of explanation. Thus the construction of a metaphysical system such as that put forward in the *Monadology* is the first task of science if the empirical observation of the mechanical order is to harmonize

with final causation. For Leibniz, the great foundation for such a system is mathematics, which gives us the principle of identity: “that a proposition cannot be true and false at the same time.” This single principle “is sufficient to demonstrate every part of arithmetic and geometry, that is, all mathematical principles.” Yet in order to proceed from mathematics to natural philosophy, another principle is required: “the *principle of sufficient reason*, namely, that nothing happens without a reason why it should be so rather than otherwise.”²⁴ The principle of sufficient reason reproduces Aquinas’ rejection of the distinction between *poiesis* and *praxis*, for it entails a world in which every action and event can be explained according to a pre-given rule. It guarantees the rational structure of nature and establishes philosophy as the queen of the sciences, allowing the transition of mathematical principles from the theoretical order to the sensory inquiry of nature.

In order to accommodate the empirical sciences into philosophy’s conception of knowledge, Christian Wolff reproduces Leibniz’s dualistic account of experience by outlining a system of metaphysics in which there are two modes of knowledge, one consisting of passively received sense impressions, the other of understanding. Both constitute ways by which we can reach knowledge of the truth, yet they remain separate, one higher than the other. Sensory input, on its own, cannot yield knowledge of natural order, for the principles required to convert sensory experience into knowledge—such as the principle of sufficient reason—belong to the intellect. Yet when “understanding is added,” Wolff states, “the same ideas become distinct.”²⁵ In other words, while experience lets us know that something is, it “does not see how it is connected with other truths,” for in knowledge from experience “there is no reason.”²⁶ Wolff concludes that “experience is opposed to reason,” for each provides a different level of clarity and distinctness. If we are to gain knowledge of the sensory order, experience is certainly required, but it must yield to reason.

The generation dilemma

As the empirical sciences developed in sophistication and complexity, Leibniz and Wolff continued to privilege the clarity and distinctness of the cognition of nature over the confusion of sensory experience. However, their attempt to maintain a rationalist foundation for scientific inquiry came under strain during the mid-eighteenth century, particularly in light of the developing life sciences. This tension is captured in the debate over the

nature of organic generation. On one side of the debate stood defendants of the traditional, preexistence conception of nature advocated by Descartes, in which the form of organic matter was directly created by God. On the other side, advocates of a new preformationist conception of nature argued that while original members of kinds were divinely created, they were endowed with the capacity to generate others occurring to natural laws. In the preexistence conception of nature, changeless order can be grasped by observation and converted into distinct ideas through speculation, for the present organization of genus and species expresses God's original act of creation. In the preformationist conception, science requires a new method capable of grasping connections and tracing the historical development of different species from an original genus. Building on the British tradition of experimental philosophy, the preformationists held speculation in contempt. In their view, speculation occludes the veracity of empirical facts, for it raises natural contingency into thought in order to fix it in the garb of changeless form. The preformationist research program thus posed a fundamental challenge to the primacy of metaphysics over empirical observation, threatening to efface the impassable boundary between the Leibnizean spheres of nature and grace.²⁷

Preformationism rapidly became the leading paradigm in the life sciences, and by the mid-1700s it had split into two camps. In one camp, advocates of individual preformation fought over the location of the divine preformed germ; ovists such as Albrecht von Haller and Charles Bonnet believed the female egg to be the germ, while animalculists such as Nicolaas Hartsoecker located it in the male sperm.²⁸ While they differ over the germ's present location, both the ovists and the animalculists postulate an original organization that, as Peter McLaughlin describes, "explained why only those of the physically possible particle combinations that actually exist were chosen by the Creator in the beginning."²⁹ God's original creative act establishes a First Principle that determines all possible forms, thus advancing a mechanical view of the world that unfolds according to an efficient principle. In the other camp, advocates of an epigenetic form of preformationism—such as Pierre-Louis Maupertuis; Georges-Louis Leclerc, Comte de Buffon; and John Needham—argued that the form of a living thing comes into existence at its birth. The parts do not determine the whole, but rather the whole gives the proper form for the generation of the parts. In an epigenetic conception of nature, new form is created wherever there is life, meaning that the world is infused with spontaneous self-propagation. The idea of natural spontaneity poses a radical challenge to both the preexistence and

individual preformationist theories, for it presupposes a concept of nature that cannot be fully explained by the efficient causative paradigms. While members of the plant and animal kingdoms were initially formed by God, they were endowed with the capacity to generate others and dynamically respond to their environments; thus they are genuinely self-organizing. Form and matter do not rest in two different spheres of experience, for matter expresses form.³⁰

In *Histoire Naturelle* (1749), Buffon made a decisive argument in favor of the epigenetic account of preformationism. He proposed that the life sciences require a new procedure for thinking about the concepts used to categorize nature, a procedure he called “natural history.”³¹ In contrast to the British tradition of natural history inspired by Francis Bacon, which takes the present appearance of animal and plant species as an expression of God’s original creation, Buffon examines the existence of order in terms of human schematization. While the natural world appears to us as “Cosmos,” an ordered whole where all that might possibly exist does exist, schematic order is a subjective result of the workings of the human mind rather than an imitation of objectively existing form. Thus an appropriate method must begin with self-limitation, withholding our desire to impose categorical and quantitative distinctions in order to discern the nuances and gradations of historical development. Buffon’s argument for a new methodology further problematizes the primacy of metaphysics in natural philosophy, for it implies that if we begin from concepts, our empirical analysis merely conforms to the concepts we use. In other words, our conceptual vantage on the world is not disinterested, giving an objective account of how the world “really is.” Rather, it discloses an ordered Cosmos according to the interests of human cognition. If we presume that nature organizes itself according to the concepts of genus and species, for example, then the existence of genus and species is precisely what we find.

Buffon aimed his account of the schematizing activity of cognition at the influential method of the botanist Carl Linnaeus that became popular in France during the 1740s. Linnaeus developed a novel taxonomic theory that understood the present members of the plant and animal kingdoms to have arisen by descent from a few original forms that were created in an original garden. This system followed Aristotle’s taxonomy, relying on just a few “artificial” characteristics, such as being warm or cold blooded, and reproducing oviparously or viviparously. Buffon argues that while these artificial systems are economical, they lead to serious errors in classification. Linnaeus’ systematic arrangement of organisms by essential characteristics

does not give the order of nature, but merely an arbitrary order imposed by the mind.³² Thus Buffon contends that Linnaeus' attempt to provide an encyclopedic taxonomy of plant life fails to question the mental schema that make such an attempt possible.³³ To provide an alternative, Buffon calls for a new "quality of spirit" that will open a method for the natural sciences that has philosophical grounding:

Here there is need for a new methodological approach to guide the mind, not that artificial method of which we have spoken [that of Linnaeus], for that only serves to arrange words arbitrarily, but for that method which sustains the very order of things. . . . Even in our own century, when the sciences seem to be cultivated with care, I believe that it is easy to perceive that philosophy is neglected, perhaps more so than in any other century. The skills which one would call scientific have taken its place. . . . We pay hardly any attention to the fact that all these skills are only the scaffolding of science, and not science itself.³⁴

Buffon's attempt to reinvigorate the importance of philosophy to scientific inquiry became something of a call to arms for Kant, Caspar Friedrich Wolff, and Johann Friedrich Blumenbach. Buffon argues that his proposal for a new philosophical method "makes us capable of grasping distant relationships, bringing them together, and making out of them a body of reasoned ideas."³⁵ To "combine" observations, he explains, is to link "them together by the power of analogy, and the effort to arrive at a high degree of knowledge."³⁶ This analogical method does not begin from the categories we already possess in order to explain what appears in nature. Rather, it begins from phenomena; that is, it begins without a concept and aims to bring the chaotic appearances together in order to create ideas for the interests of human cognition. These ideas are "reasoned," but they emerge from experience. Such a procedure is both empirical *and* rational, for it begins with phenomena and then searches for a concept. While Buffon did not push the theory of epigenesis as far as Wolff and Blumenbach, who held that organic life begins with unstructured matter and self-forming powers, he nevertheless realized the challenge that epigenesis posed to rationalist philosophy. If research into organic processes reveals natural agency, then natural history would have to commit itself to the principle that nature is susceptible to change. Yet if we consider nature in terms of change, then Descartes' two explanations of natural events cannot

rest side-by-side, one higher and the other lower. Rather, they come into an irresolvable antinomy.

We can set out the antinomy by using Descartes' reference to seeds. If a tree in its final state is different from its initial state as a seed, then there will be some features of a tree that are different from the seed. The question is what relationship those features of the tree bear to the seed. If the novel features of the tree are already present implicitly, but not apparently, in the seed, then they are not actually new but are derived from an original order. However, if the novel features are *not* to be found in the seed, then they must be contingent and thus unexplained. In this formulation it seems that the tree is either inexplicable in relation to the seed, or it is not really a development from the seed at all.

To suggest that organic life is subject to change is to radically alter the goal of describing nature. Change produces variation, which, if we take it as expressive of an organism's actual being, means that the task of natural history is not simply taxonomy but also genealogy.³⁷ As Kant later notes in a distinctly Buffonian style, the categories of genus and species only have a meaningful difference when we undertake the "description of nature" (*Naturbeschreibung*).³⁸ From the view of "natural history" (*Naturgeschichte*), on the other hand, genus and species both refer to the same phenomenon of natural descent; they are useful categories that bring order to the chaotic mass of natural phenomena. For Buffon, natural history is not merely a study of objects but also a self-reflective inquiry into our own faculty of categorization. Categories such as genus and species enable us to see more than there is in the information delivered by our senses.

Buffon argued that his nominalist approach to classification does not entail a chaotic conception of nature, for the fact that we have categories at all suggests that nature is highly amenable to systematization. If we are to recognize the contingency of our understanding of nature without collapsing into chaos, however, we cannot think of nature purely in terms of efficient causation. Instead, we must think of nature as an organic whole that organizes itself according to some kind of Aristotelian teleology. While Buffon refrained from illuminating the living dimension of nature as a whole in *Histoire Naturelle*, Casper Friedrich Wolff put forward such a vitalist account in his pioneering vision of descriptive embryology. Wolff claimed that to explain the emergence of organisms from embryos, we must presume the action of a "*vis essentialis*," an organizing force closely related to Aristotle's notion of entelechy.³⁹ This force is nothing like that which we find in Newton's *Mathematical Principles*. Rather, it is a metaphor for the internal

tendency of embryos to grow and realize themselves. In the paradigm of final causation, form (such as genus and species) does not dwell in nature in the paradigm of Leibnizean monadology. In Leibniz's conception of the monad, soul and body dwell harmoniously together in impassable spheres. Instead, the form of nature is expressed by what appears as nature unfolding according to its own inner purpose. In other words, the soul is the expression of the body. Thus sensation *and* reason are required to judge a body's purpose, and the act of judgment is a matter of codetermination where both subject (the observer) and object (the observed) are actively involved. This view is much closer to Aristotle's form/matter distinction than Leibnizean metaphysics, for it entails that when matter is in motion, the cause of its coming-to-be (its form) is expressed in the movement of its parts.⁴⁰

As anatomists and embryologists such as Buffon and Wolff became increasingly aware of the creative dimension of cognition, the realm of art—and Aristotle's theory of art in particular—gained a new significance in the task of exploring the nature of experience. If thought is free from natural constraints and gives order to experience according to categories of its own devising, such as genus and species, then we might say that it has an "artistic" dimension, crafting an image of nature that is more than the data given by the senses. *Histoire Naturelle* itself gives testament to this understanding of experience, for it reads more like a romantic novel than a scientific treatise. If experience involves an artistic dimension, then the task of science cannot simply be to outline a theoretical account of nature's first principles, for the end of nature is emergent rather than pre-given. Nature without theoretical reason is not mere chaos, for, as Buffon observes, it works toward creating order in a way amenable to reasoned inquiry.

In *Histoire Naturelle*, Buffon calls for a new procedure by which to navigate contingent, sensory experience, one that is both creative and reasoned. Because natural history begins from nature's self-expression, a new spirit of inquiry is required that does not seek to imitate a stable foundation but begins from the products of nature in order to discern their inner purpose. When science is no longer understood as imitation but as a creative project, a new conception of the agency of both the scientist and nature is required. In the following two sections I examine the attempts to build such a conception of agency by rationalist and empiricist philosophers. While rationalists like Baumgarten elucidate the importance of a sensuous cognition that nonetheless remains subordinate to reason, it is empiricists such as Hume and Moor who understand this new kind of cognition in relation to reason. In the following sections I suggest that it is this empiri-

cal move that brings the artistic genre of tragedy into the field of concern. However, while the empiricists become concerned with the problematic of tragedy, it is not until philosophers such as Young and Herder proffer a third alternative, one that draws from *both* rationalism and empiricism, that the full importance of the tragedies can be seen.

The rationalist response

As an increasing number of prominent biologists began to adopt epigenetic preformationism, it seemed to many that the hegemony of metaphysics over the natural sciences was reaching an end and that a new way of thinking about the natural world was required. Some biologists such as Haller and Bonnet reacted against Buffon, aiming to strengthen the individual preformationist position by developing an active theory of matter that remained subject to preestablished principles. Philosophers who remained committed to rationalism also sought new ways to account for the role of experience within a mechanical concept of nature.

Alexander Gottlieb Baumgarten, a student of Christian Wolff, attempted to reestablish the primacy of philosophy by calling for a systematic study of the means by which we acquire and express sensory knowledge. In this study, Baumgarten sought to find an objective validity for sensuous thought and a claim to truth that was equal to cognition.⁴¹ While he retained Descartes and Wolff's distinction between the higher and lower faculties, he explored the faculty of sensuous knowledge in the attempt to provide a rational foundation for empirical science. Baumgarten termed this science "aesthetics," defining its parameters in the opening paragraph of the *Aesthetica* (1750) as "the theory of the liberal arts, the lesser theory of knowledge, the art of thinking beautifully, the art of reason by analogy."⁴² Aesthetics takes the form of "the science of sensuous cognition," that is, an inquiry into the nature and limits of the rationality expressed in sensory experience.

Baumgarten claims that just as logic is concerned with the operations of reason and the understanding, the new discipline of aesthetics ought to be a legitimate part of philosophical inquiry concerned with what we apprehend through the senses.⁴³ Through giving attention to individual appearances, he argues that the goal of Wolffian science—distinct ideas—comes at a significant cost: by subsuming an individual appearance beneath a concept or by enumerating its attributes, anything that exceeds our capacity

of understanding is excluded from the purview of legitimate science. In Baumgarten's terms, "the specific formal perfection contained in cognition and logical truth had to be bought dearly by a great and significant loss of material perfection. For what else is abstraction than a loss?"⁴⁴ Wolff's understanding of philosophy privileges logical form over sensuous appearance, which requires the abstraction of form from sensory experience. For Baumgarten, while this method guarantees clear and distinct knowledge, it only provides a partial and impoverished perspective of the world. On its own, theoretical knowledge cannot "reach the knowledge of the truth"—the very task it is meant to achieve—for it remains separate from the empirical sphere, the very sphere in which truth is meant to be operative.⁴⁵ Opposed to Wolff's constrained picture of reason, Baumgarten advances the field of aesthetics as an exercise in our capacity to grasp reality in its particularity and complexity, drawing what exceeds logical systematization into philosophy's field of concern.

In order to outline his account of sensuous cognition, Baumgarten turns to art. Art provides an alternative kind of synthesis to the marriage of concepts and appearances in the mind, for it does not work with abstractions (it does not proceed from concept to appearance) but with the totality of an organism (from appearance to concept). An artwork is produced by the collaboration of the sensuous, imaginative, and intellectual faculties, meaning that it is both an interaction with the world we experience *and* the synthesis of this material with intellectual ideas. In this view, the synthesis afforded in art cannot be understood in the Platonic terms of *mimesis*, for it is utterly new and unprecedented in every case. Yet as an operation that involves the understanding, it is a mode of knowledge—of truth—for through sensuous cognition we come to learn about the world in its complexity. In this framework truth does not preexist cognition but is a cognitive activity of the subject. If art is such a synthesis, then, as Aristotle claims in *Poetics*, the study of art will shed light on the complexities of human nature and experience to the fullest degree. Moreover, art history will be the locus for a new philosophical study in anthropology, just as natural history becomes a kind of genealogy for Buffon. Sensuous cognition is temporal, expressing a particular experience that is radically opposed to the abstractions of timeless being. If artworks have rules, they are not objective necessities or natural regularities. Rather, they are the products of human freedom.

While Baumgarten attempts to establish the philosophical legitimacy of sensuous experience, he does not break with the rationalist mind/body split of Wolffian philosophy. Thus he remains unable to ground an indepen-

dent science of human sensibility, for his notion of truth remains monopolized by the higher cognitive faculty, that is, the understanding. Theoretical matters, such as logic and ethics, are held apart from sensory matters, leaving no path for empirical observation to connect to matters of human being or moral philosophy in a way that could defy the attacks of skepticism.⁴⁶ In other words, by remaining committed to rationalist metaphysics, Baumgarten's philosophy entails an account of aesthetic judgment exempt from the constraints of cognition. The problem opened by Baumgarten's aesthetics is how sense and reason might be harmonized.

The empiricist response

In "On the Standard of Taste" (1757), David Hume posits an alternative account of the connection between sense and reason to Baumgarten's aesthetics. To do so, he attacks a certain "species of philosophy" to which Baumgarten remains committed, one that destroys the possibility of aesthetic agreement by separating experience from reason. This species, of course, is rationalism. In such a species of philosophy, "all sentiment is right; because sentiment has a reference to nothing beyond itself." When it comes to reason, however, "all determinations of the understanding are not right; because they have a reference to something beyond themselves, to wit, real matter of fact."⁴⁷ Hume's caricature aims to show that rationalists are committed to the idea that sentiment is subjective, and thus philosophically deficient, and that the understanding is objective and thus the proper faculty of philosophy. Not even Baumgarten breaks from this view, for he maintains that reason gives fact while the senses give subjective impressions. To provide an alternative, Hume turns to the concept of taste.

Hume's notion of taste is a sensuous measure that is not purely subjective but, rather, operates in accord with reason. Unlike the rationalist conception of sentiment, Hume argues that taste follows empirical (*a posteriori*) rules acquired through experience. Taste is not reducible to reason, however, for while reason makes claims about matters of fact, taste involves the measure of *sensation*. While reason appeals to the nature of things, taste is productive; Hume notes that the rules it follows are not "*a priori*," "eternal," or "immutable" but share a foundation with the "natural sciences."⁴⁸ This foundation is "experience." Poetry, for example, is confined by the "rules of art," rules discovered by the author "either by genius or observation." Genius, for Hume, involves the production of rules that are

made publically available by sensuous communication. Observation, on the other hand, involves the experience of artworks whereby one's mind is furnished with the rules appropriate to a given genre. Thus Hume provides an alternative to the rationalist tradition by identifying a sensuous mode of cognition that does not collapse into subjectivism. Taste provides a shared "standard"—a set of *a posteriori* rules—for "confirming one sentiment, and condemning another."

Hume first outlined this argument in *Treatise on Human Nature* (1739–1740) by linking beauty to aesthetic feeling. Here he states that "*feeling* constitutes our praise or admiration," which is to say that feeling or sentiment *is* the beauty of the artwork.⁴⁹ Beauty is not the participation in the First Principle, as it was for Aquinas, and neither is it in the artwork itself. Rather, the "immediate" sentiment produced by the observer is the source of value we call beauty; taste, in this sense, sets value into motion. While reason "conveys the knowledge of truth and falsehood," taste "gives the sentiment of beauty and deformity, vice and virtue."⁵⁰ In other words, while reason discovers objects "as they really stand in nature," taste "has a productive faculty [giving rise to] a new creation." What Hume seems to be saying is that while reason is concerned with knowledge, meaning that it is limited to nature, taste is concerned with aesthetics and virtue, meaning that it goes *beyond* nature: it is productive, though not in the paradigm of *techné*, which produces according to preestablished rules. The products of taste take the status of a new creation, extending beyond the material given by nature in order to construct a collective sense shared by a community. As soon as we have a productive notion of taste, we have departed from the rationalist conception of nature in which creation is monopolized by the original act of the creator.

While Hume's notion of taste provides a subjective account of sentiment that retains a common standard, he refuses to harmonize reason and taste. Thus he inherits a particular problem from rationalism, namely, how to explain the pleasure found in artworks that are *disagreeable* to the observer. This problem becomes evident in his essay "Of Tragedy," where he attempts to explain the pleasure that "a well-written tragedy" affords by producing "sorrow, terror and anxiety" and other naturally disagreeable emotions.⁵¹ To provide an explanation Hume must outline how the disagreeable sentiment we feel at the transgression of order can be converted into an agreeable sentiment if sensation is disconnected from thought (if it is "immediate"). He builds on the thought of French playwright Jean-Baptiste Dubos, who defended the significance of tragedy as a constituent of moral development. For Dubos, "tragedy excites and cherishes the good passions, but raises

abhorrence at the vicious and wicked passions.”⁵² Yet Dubos’ defense of tragedy does not ultimately assist Hume’s case, for it raises the question of how tragedy can excite the good passions if it presents scenes that ought to occasion a negative response, such as performances that elucidate the frustration and failure of moral intentions. Hume argues that any emotion that “attends a passion, is easily converted into it, though in their natures they be originally different from, and even contrary to, each other.”⁵³ Because the passions are not caused by facts about the world, such as order or disorder, but are “new creations,” tragedy manifests the ability of art to “convert” one passion (such as displeasure) into another (pleasure).

However, because he insists that the passions or sentiments must remain separated from reason, Hume is unable to give a clear account of how or why such a conversion from a disagreeable to an agreeable sentiment occurs. If sentiment and reason are radically separate—one a spontaneous creation and the other a constrained, calculative procedure—the process of taking pleasure in the suffering of another on stage is no different from taking pleasure in another’s *actual* suffering. In other words, and according to this paradigm, it illuminates a flaw in moral taste. As Hume states in “On the Standard of Taste,” writers who present the collapse of order “have not pleased *by* their transgressions of rule or order, but *in spite of* these transgressions: they have possessed other beauties, which were conformable to just criticism.”⁵⁴ Thus the standard for judging a tragedy relies on its ability to condemn vice without presenting action that is “too bloody and atrocious.”⁵⁵

In *The End of Tragedy according to Aristotle* (1763), James Moor argues that both Dubos and Hume are unable to explain the “chief difficulty vis how Tragedy purifies any passion by means of exciting that very passion,” for neither understand the role of reason in Aristotle’s notion of *katharsis*.⁵⁶ He attributes this misunderstanding to their failure to “attend to the propriety of the [Greek] language,” arguing that they render Aristotle’s *pathē* and *pathēmata* as “Sufferings, or Calamities”—that is, as unfortunate *external* events—rather than as emotions occurring within the character.⁵⁷ Thus Dubos and Hume overlook the distinctively tragic dimension of the suffering presented in tragedy. When understood as unfortunate events acting *on* the character, the suffering is not tragic. It is merely misfortunate, and the reason for the transformation of emotion is unclear. When understood as emotions experienced *within* the character upon becoming aware of their own culpability in their suffering, however, the suffering presented is tragic. It involves an affective experience that clarifies our sense of things, our grasp on the magnitude of the world.

Moor's main concern with Hume's account of taste is that by separating taste from reason, Hume cannot explain how taste might be refined by reason. For Moor, the purpose of tragedy for Aristotle was to persuade the audience to remove (*katharein*) calamities (*pathēmata*) from the world "by exciting the Pity and Terrour of the audience at the representation of them."⁵⁸ Understood as a properly aesthetic experience, tragedy excites pity and terror by presenting the calamities that result from our own doing, thereby reorienting our understanding of how human action coheres with nature. The end of tragedy is thus a moral and political reform by means of educating taste according to reason. The pleasure found in tragedy does not issue from sadism, but rather in the moral clarification undergone when we come to understand the nature and causes of suffering. In other words, the pleasure Aristotle locates in tragedy is intrinsically linked to *reason*, igniting our passion so as to affect a moral transformation in the spectator. Moor argues that if the French playwrights could build from this understanding of Aristotle, "the places of public resort and amusement might become some of the most agreeable and useful schools of education."⁵⁹

Moor puts forward what Poster describes as a "rhetorical-humanistic" reading of Aristotle.⁶⁰ Like Dubos and the French playwrights who attempted to restage tragedies in the modern age, Moor was clearly frustrated with the scholastic focus on Aristotle's speculative texts and emphasized the *Politics*, *Poetics*, *Rhetoric*, and ethical treatises. Yet writing against the playwrights who attempted to use *Poetics* as a textbook for creating new tragedies, he reinterprets Aristotle as a practical *philosopher*, that is, a philosopher concerned with "the productive arts and those matters about which knowledge is probable rather than certain."⁶¹

The rhetorical-humanistic reading of Aristotle draws our attention to the impossibility of designing a science about the particularities of living beings. For singular events and expressions, or in Moor's words, in matters about which knowledge is probable rather than certain, the exclusive focus on knowledge as *technē* is inadequate, for it involves a mode of production guided by principles *already* in our possession. Aristotle's account of *phronesis*, on the other hand, outlines a mode of reasoning guided by experience. *Phronesis* is not predetermined or guided by an end other than itself. Rather, it participates in the formation of nature as a shared project.⁶² By emphasizing the importance of *phronesis* for scientific and artistic thought, Moor's rereading of Aristotle shifts the emphasis of philosophy from an exclusive focus on demonstrable truth to a more expansive concern for singularities, such as living things and complex ethical dilemmas.