2 Hermeneutics and Nature

Dalia Nassar

Over the last few years, historians of science have turned their attention to the ways in which the study of history, human languages and cultures influenced the development of various natural-scientific disciplines.[1] Two claims have emerged from this research: the first is a critique of previous histories of science, which anachronistically applied the late nineteenth-century division of the *Naturwissenschaften* and the *Geisteswissenschaften* onto earlier centuries, and thereby overlooked the mutual influence the two fields exerted on one another.[2] The second is that it was primarily the methodological practices and insights of the humanistic disciplines that influenced certain natural-scientific fields.[3]

Although this work has been largely focused on Renaissance and Early Modern scientific practices,[4] recent scholarship on the eighteenth century has become increasingly attuned to the need to investigate the role of the natural sciences in the development of key fields of the humanities.[5] This is most evident in studies on the rise of historicism, which have (at least) noted the role that natural history played in the development of the historical study of human cultures.[6] The same does not hold for research into the emergence of modern hermeneutics, arguably the human science par excellence.[7] This might be due to the fact that most studies of hermeneutics focus on (or begin with) the nineteenth century, and thus largely assume Dilthey's distinction between the human and the natural sciences.[8] Alternately, or additionally, it might have to do with the fact that one of the most influential voices in twentieth-century hermeneutics, Gadamer, criticizes the natural sciences for overlooking their situatedness, and in so doing overlooks the possibility that

pre-positivist (i.e., eighteenth century) natural science may have influenced the emergence of hermeneutics.[9]

Whatever the reason, it is perhaps telling that research focusing on the eighteenth century, in contrast to more general work on hermeneutics, has recognized the role of the natural sciences in the emergence of the study of interpretation.[10] However, these studies, along with the work on historicism, have interpreted the relationship as uni-directional: the natural sciences influenced the rise of historicism and hermeneutics. But is it possible that the influence was bi-directional – that hermeneutics was not only influenced by natural history but that it also influenced certain aspects of the study of nature, leading to new insights and discoveries? Could the study of nature in the late eighteenth century have involved hermeneutic methods and insights that ultimately transformed the ways in which we approach and represent the natural world?

To answer this question, I will consider the relationship between hermeneutics and natural science in the eighteenth century, focusing on three figures, Buffon, Diderot, and Herder. Though Kant has been recognized as developing something like a hermeneutics of nature in the *Critique of the Power of Judgment* (1790) – through reflective judging and the idea of life[11] – these thinkers developed the notion of an interpretation of nature well before Kant (such that many of Kant's key claims are already present in their work), and they were able to integrate the hermeneutic method into their study of nature more coherently than Kant ever did or was able to do.[12] After all, unlike Buffon, Diderot, and Herder, Kant remained wedded to the idea of science as founded on mathematics,[13] such that he could not agree with the "liberalization" of science that took place in the mid-eighteenth century, which led to the introduction of new modes of knowledge into scientific research.[14] My claim then is that the emergence of a hermeneutics of nature must be understood in light of this liberalization of science, heralded by Buffon, designated by Diderot, and carried out most comprehensively by Herder. As I will argue,

it was Herder's new methodology – developed for the interpretation of historical texts and authors – that furnished the most concrete response to a key problem facing both Buffon and Diderot and that offered significant insights that resulted in the development of a new, dynamic natural history and geography.[15]

THE EIGHTEENTH-CENTURY LANDSCAPE

In 1735 Linnaeus placed the human being in the class "quadruped" and created the anthropomorphic order, which included monkeys, lizards, and sloths. The reasoning for this was that they all shared the same arrangement of teeth. Buffon, among others, considered this to be both arbitrary and far too narrow a way by which to draw classifications. Linnaeus's classification, he argues in the *Histoire naturelle* (1749–1804), is based on "a metaphysical error." He writes:

> it is easy to see that the great fault in all of this is a metaphysical error … in wanting to judge a whole by only one of its parts: a very obvious error, and one that is surprisingly found everywhere; for almost all of the classifiers have employed only one part, such as teeth, claws, or talons, to classify animals, and leaves or flowers to categorize plants, instead of using all of the parts, looking for the differences and similarities in the entire individual thing.[16]

By confusedly taking the part for the whole, by narrowly focusing on one aspect of an animal's or plant's structure without taking account of the "entire individual thing," Linnaeus's system imposed abstract categories onto nature, which had little or nothing to do with nature itself. Thus Buffon contends, "that way of knowing is not a science, it is only a convention, an arbitrary language."[17]

In light of his critique of abstraction and convention, Buffon introduced the distinction between "physical" and "abstract" truth. One kind of abstract truth, he argued, is mathematical truth, insofar as it is an invention of the human mind. Physical truths, by contrast,

are real; they exist in the natural world and are the proper object of human inquiry.[18]

Buffon's emphasis on real or physical truths led him to a new, historicized conception of species and of nature more generally. In the place of Linnaeus's arbitrary classifications, Buffon argued that natural history must be concerned with "real" relations, which can only be discerned through historical insight. Thus, he writes,

> [natural] history must follow description, and must solely center around the relations which natural things have among themselves and with us: the history of an animal must not be the history of the individual, but that of the whole species; it must treat their generation … the number of their young, the care of their parents … their place of habitation, their food … and finally the services they can render us.[19]

In other words, in order to overcome the abstract systems of taxonomy, it is necessary to reconceive natural history: natural history must consider a species in relation to its context, and, most importantly, regard it not as a static (eternal) entity, but as the continuation of a group of individuals (in time) through reproduction.[20] In one stroke, Buffon offered a new definition of species, historicized nature, and redefined natural history.

In the *Histoire naturelle* Buffon identified a difficulty with his approach, one that has to do with the difference between the way in which our intellect operates and the way in which nature operates. Our intellect proceeds linearly, taking only single steps in one direction. Nature, by contrast, "does not take a single step except to go in all directions; in marching forward, she extends to the sides and above."[21] With this apparent incongruity between the mind and nature, the question arises as to how it is possible to glean any unity in nature's infinite multiplicity. Lacking a priori theoretical foundations, it is not evident how natural history can capture nature's diversity in a coherent or meaningful way.

It was precisely this question that Diderot posed in his *Pensées sur l'interprétation de la Nature* (1753/1754[22]). Like Buffon, Diderot was deeply critical of the mathematical and a priorist methodologies of his predecessors, writing that "the domain of mathematicians is a world purely of the intellect, where what are taken for absolute truths cease entirely to be so when applied to the world we live in."[23] Nonetheless, Diderot notes that lacking mathematical or a priori foundations, it appears impossible to achieve unity in natural history, such that "[e]ven if experimental science continued to work for century after century, the materials which it accumulated would eventually have become too great to fit into any system, and the inventory of them would still be far from complete."[24]

For Buffon and Diderot the solution to this dilemma is found in analogy and comparative analysis.[25] Thus Buffon writes in the *Histoire naturelle*:

> This goal is the most important one … to combine observations, to generalize about facts, to tie them together by the force of analogy [*par la force de l'analogie*], and to try to arrive at this high degree of knowledge where we can judge that particular effects depend on more general effects, where we can compare nature with herself in her great operations, and from where we can finally open up the paths that will permit us to perfect the different parts of physics.[26]

Natural history requires analogy because it is only through comparing various structures that we can begin to discern similarities and recognize differences between species. Thus in his account of anatomy, Buffon notes that it was not until anatomists began to compare human and animal bodies that any knowledge was achieved. For, he explains, "What real knowledge can be derived from a single object? Is not every science founded on the comparison of similar and different objects, of their analogous or opposite properties, and of all their relative qualities? Absolute knowledge, if it has an existence,

exceeds the powers of man: we can only judge by the relations of things."[27]

By discerning similarities and differences, analogy provides a means by which to grasp continuity in nature – real relations – that are not based on just one structural similarity, or an a priori taxonomy. Such an analogically based account of nature differs, however, from a systematic account founded on mathematical construction or axiomatic demonstration. For one, it necessarily remains open to being corrected – analogical inference may be wrong. Furthermore, it cannot establish certainty – analogical inference achieves probability only.[28]

The road to the "interpretation of nature," as Diderot put it, was opened. The use of analogy implied that the study of nature could not yield certain, eternal knowledge, but it also implied that natural history was not and cannot be the mere accumulation of disconnected facts. Rather, natural history must involve observation guided by a literary tool – analogy – in order to discern similarity and difference. In other words, the way to resolve Diderot's problem was to invoke a literary device in order to "interpret" nature. The natural scientist, as John Zammito has noted, became more than an *observateur* of nature (Bacon); she was now an *interprète* of nature.[29] In the *Pensées*, however, Diderot did not provide a detailed account of the methodology of the interpretation of nature. Though Buffon provided insights into overcoming this difficulty, he too did not furnish a comprehensive methodology. It was Herder who, through his *new methodology* of hermeneutics, provided the first comprehensive "interpretation of nature."

HERDER AND BUFFON

Herder was familiar with Buffon, and makes ample reference to him throughout his writings.[30] He was, furthermore, sympathetic to many of Buffon's ideas: Buffon's critique of a priorism and mathematical-universalist accounts of nature; his claim that human history must be considered part of natural history; and his critique of abstraction

in science. However, Herder's attitude toward Buffon was, as John Zammito notes, mixed.[31] Herder worries that Buffon was not able to achieve his aims, because he remained tied to the prejudices of his age. For although Buffon sought to develop a concrete, holistic account of the natural world – an account that is not focused on one aspect of an organism's structure – his tendency was to analyze and distinguish, rather than synthesize and unify.

In his study of Thomas Abbt, Herder distinguishes Buffon as the anti-systematic thinker who is needed to combat the likes of Linnaeus in the study of the human spirit. Thus, he writes, "when our systematic philosophers become *Linnaeus* in the study of the mind, classifying according to their own principles [*eigensinnig*], then an unsystematic mind, like *Buffon*, must be placed alongside them … in order to analyze the individuals" (FHA 2, 572).[32]

While this statement appears sympathetic, it also harbors Herder's worry about Buffon, namely Buffon's apparent tendency to dissect and analyze without finding a way by which to synthesize. This worry is clearly expressed in Herder's 1772 prize essay on the origin of language, where he places Buffon alongside Condillac and Bonnet, and criticizes all three for their failure to unify what they have dissected. Herder writes: "All dissections of sensation in the case of *Buffon's, Condillac's*, and *Bonnet's* sensing human being are abstractions; the philosopher has to neglect one thread of sensation in pursuing the other, but in nature all these threads are a single web!" (HPW 107).[33] Although Herder is here specifically concerned with their respective accounts of human psychology and physiology, his critique obtains for what he sees as a general tendency in Buffon's approach. Though Buffon *intends* to offer a holistic account of the natural world, his efforts are not fully realized. This can be seen in Buffon's account of "climate," and in Herder's transformation of this (somewhat superficial) conception into a key methodological tool for natural history (and ultimately geography).

Buffon introduces the notion of climate, alongside nourishment, in order to account for differences among animal species and

among humans.[34] By climate, Buffon implies primarily temperature but also geography.[35] Speaking of horses, he remarks that "studs kept in dry light soils produce active, nimble, and vigorous horses, with nervous limbs and strong hoofs; while those kept in moist ground, and in too rich pasturage, have generally large heavy heads, gross bodies, thick legs, bad hoofs, and broad feet. It is easy to perceive," Buffon concludes, "that these differences proceed from the varieties in climate and food."[36]

Climate and nourishment are thus regarded as the ultimate causes of differences within species. This is evident, for instance, in Buffon's claim that variation in human skin color is due to, on the one hand, the climatic zone a human inhabits, and, on the other, the influence of food.[37] In contrast to Buffon's two categories, Herder contends that "it is much more the case that a large storehouse of other forces, both disadvantageous and advantageous, are connected to us" (FHA 6, 265). Though Herder does not specifically point to Buffon here, this statement resounds with his earlier critique of Buffon's tendency to dissect. The claim is that Buffon – despite his efforts – was unable to follow nature's many directions, along a non-linear path, and find unity therein. In his emphasis on just two categories, Buffon remains one-sided in his analysis; he does not account for the complexity and multi-directionality of nature's (many) "forces."[38]

In contrast to Buffon's climate and nourishment, Herder develops the notion of a "world" or a "circle," which aims to recognize and encompass multiple essential aspects of a natural (and cultural) environment, the relations between these aspects, the ways in which these aspects reflect and are reflected in individuals and species, and most importantly, the ways in which these various aspects form an integrated unity. Working with analogies, Herder, like Buffon, aims to discern similarities among the multiplicity of natural phenomena. However, through the notion of a world, Herder extends his use of analogy beyond a one-to-one comparison (i.e., comparing the structure of one species or variety to another in light of a specific natural phenomenon, such as heat). For, as we shall see,

the idea of a world implies a multiplicity of factors – a "chaos of causes and effects" (FHA 6, 266) – and their co-determination. Herder invokes the notion of a world in order to follow nature's many paths and discern unity in the multiplicity. How does Herder arrive at this idea of a world, and how does he apply it to resolve Buffon's and Diderot's dilemma? I will begin with the first question, and argue that although Herder introduces the notion of a world in the prize essay on language, it was in his preceding writings on the interpretation of historical individuals and texts that he developed the idea.

HERDER'S HERMENEUTICS

Herder's hermeneutics, like Buffon's methodology, is critical of a priori theories of interpretation. In their place Herder develops a theory of interpretation that employs a bottom-up approach that seeks to grasp the particularity of a culture, and understand it from within (FHA 1, 97). As he puts it in *This Too a Philosophy of History* (1774), "every nation has its own center of well-being with itself, just as every globe has it center of gravity" and the task of the interpreter is to grasp precisely this center (FHA 4, 39). The question thus is: how is an interpreter to grasp the "center" of a culture long gone, or discern the "center" of a text or work of art? What, in other words, are the methods that the historian or interpreter must invoke in order to achieve this kind of knowledge?

Well before his writings on the philosophy of history, Herder had begun to consider these questions in relation to biography and the interpretation of works of art. In the essay on Thomas Abbt, Herder's concern is with how he – as the biographer of Abbt – is to approach his subject in the right way. For Herder the right way involves recognizing both Abbt's individuality *and* his indebtedness to his time and culture. As Herder puts it, "most of all it is necessary to distill [*abzieht*] what belongs to *the author's time* or to the *past world*, and what he leaves over for *the world of posterity*. He bears the chains of his age, to which he offers his book as a gift; he stands in his century like a tree in the realm of earth into which it has

driven its roots, from which it draws nourishing juices, with which it covers its originating members" (FHA 2, 579; HPW 172, translation modified). The natural imagery serves to elaborate Herder's point: an author, like a tree, is not born isolated; rather, both are dependent on the surroundings, the climate and the geography, into which they are born. They become what they are only in relation to this larger context. The aim of the interpreter (like the natural historian) must therefore be to discern *the individuality* or *distinctness* of an author (of a species) *within* her culture (within the natural environment), and not beyond or above it. Thus, Herder continues, whoever wishes to rob the author of the "birthmarks of his time," risks "taking from him the traits of his individuality [*Eigenheiten*]" (FHA 2, 579; HPW 172). An author neither exists nor can be understood outside of her or his cultural framework; it is this framework that enables the author to write, to become an author. The framework, then, is not something artificially imposed, nor is it a hindrance to understanding; rather, it must be taken into account in order to discern the author's distinctive contribution or individuality.

This means that the interpreter must, first, avoid any a priori generalizations about the author or the work: given that the author is born in a specific time and place, one cannot make any presumptions about her work or aims without first investigating the particularities into which she is born. The interpreter must, however, also avoid sinking into particularities and failing to find a "center," a meaningful and coherent unity in light of which the author's work is to be interpreted. Thus, just like the historian of nature, so the interpreter must avoid both abstraction and the mere accumulation of data; the interpreter must find a way to grasp the particular and find significance, coherence *therein*. This means, importantly, that the interpreter's aim is not to regard the author as a mere reflection of the mores of her time and place; rather, by seeking to discern the author's individuality within her context, the interpreter's aim is to discern how the author is a participant in and a contributor to her context. As such, Herder's conception of unity (context) is not

of an undifferentiated or homogenous whole, but of an internally differentiated one, composed of the individual contributions of its various members, whose contributions are themselves dependent on this unity, this context. There is, in other words, a reciprocity at work here, such that neither the whole nor the parts can exist without the other.

In the essay on Abbt, Herder explains that the means by which to achieve the goal of interpretation is by explaining "one in terms of the other [*eins aus dem andern erkläret*]," i.e., by seeing how the context is reflected in the individual author's work, and how the individual author's work adds to, or challenges aspects of, this context (FHA 2, 575; HPW 171). It is only by seeing one (the author) through the other (her age) that their similarities and differences come to light.[39] In this way, Herder extends analogical reflection, beyond a one-on-one comparison, to encompass the world that the author inhabits and which inhabits the author (the relation, as we have seen, is reciprocal). This extension is demonstrated in Herder's own hermeneutic practice, and can be seen, for instance, in his essay on Shakespeare (1773; draft 1771).

In the essay, Herder challenges French views of theater, which take Aristotle's understanding of tragedy as foundational for aesthetic judgment, in order to demonstrate their mistaken interpretation of Shakespeare. The trouble with the French approach, Herder notes, is that it fails to recognize that the world out of which Greek tragedy emerged fundamentally differs from Shakespeare's world. "In Greece," Herder contends, "the drama developed in a way that it could not in the north. In Greece it was what it can never be in the north. In the north it is not and cannot be what it was in Greece" (FHA 2, 499; SWA 292).[40] After all, he continues, "as everything in the world changes, so Nature, the true creator of Greek drama, was bound to change also. *The Greek worldview, manners, the state of the republics, the tradition of the heroic age, religion,* even *music, expression,* and *the degrees of illusion* changed" (FHA 2, 503; SWA 294). Thus, to judge Shakespeare according to the rules of Greek

drama is not only problematic, but also absurd. A work of art is, like a writer, of its time, such that its appropriateness, its "genius," can only be measured and determined in relation to its time.

Herder begins his interpretation of Shakespeare by noting general differences between ancient Greek drama and Shakespeare's, differences that are fundamentally connected to their respective worldviews. In ancient Greece there was an overarching sense of unity of time and place, as well as a sense of simplicity among the Greek people and their polity. One can say that the Greeks lacked a modern sense of history and of cultural differences. This was, Herder contends, reflected in their dramatic works (most, though not all, of Greek drama occurred in one place, for instance). By contrast, Shakespeare's world is one composed of "a rich variety of different estates, ways of life, convictions, peoples and idioms – any nostalgia for the simplicity of former times would have been in vain" (FHA 2, 508; SWA 298). For this reason his works do not occur in one place, but move from one location to the next, and involve people from a variety of backgrounds. It is also for this reason, Herder continues, that for Shakespeare plot no longer held the meaning the Greeks had bestowed upon it (i.e., a single action), but came to mean "event" or "great occurrence." Ultimately, in Shakespeare's works we witness transitions and movements that are simply not present in Greek drama, and this is a reflection of the world that Shakespeare inhabits.

Furthermore, Herder notes that ancient Greek drama was a public institution *and* a religious event, while Shakespearean drama did not have religious motivations (FHA 2, 516; SWA 304; see also SW 16, 101).[41] This means that the *aim* of a Greek drama differed from that of a Shakespearean drama, and it is only in light of this difference of aim that either can be properly appreciated and understood. Shakespeare's tragedies, for instance, include comedy – a fact that challenges the distinction between tragedy and comedy that has been upheld since Aristotle (FHA 2, 525). However, given that the aims of Shakespeare's drama differ from those of Greek tragedy, there

is no reason to abide by the Aristotelian understanding of tragedy in order to judge Shakespeare's work.

A further important difference between Greek tragedy and Shakespearean drama is the origin of their dramatic form, the source from which they drew their inspiration. While the Greeks drew on the dithyramb, mimed dance and the chorus (FHA 2, 500; SWA 292; see also SW 16, 100), Shakespeare drew on history (FHA 2, 508; SWA 298; see also FHA 2, 525; see also SW 16, 101). For this reason, Shakespeare's plays are themselves a presentation of history. Thus, Herder writes, "in Othello," we have before us a "*living history of the genesis, development, eruption, and sad end to the passion of this noble and unfortunate man*!" (FHA 2, 511; SWA 300). The Greek tragedian was, by contrast, no historian, and his genius did not lie in his ability to draw on historical events. For this reason, Herder argues that the origin or inspiration of a work of art must be taken into account when we judge its value. In other words, genius must be measured differently – Shakespeare's genius is a different kind than the one exhibited by the Greek tragedian.[42]

What then is the genius of Shakespeare? According to Herder, it is not unlike the genius of a historian. For it has to do with Shakespeare's ability to assemble the various characters, estates, and ways of life into a meaningful whole. Shakespeare "embraces a hundred scenes of a world event in his arms, orders them with a gaze, and breathes into them the one soul that suffuses and animates everything," Herder writes, echoing not only the aim of the historian but also that of the natural historian (FHA 2, 511; SWA 300). As Buffon put it in the *Premier Discours*, "one can say that the love and study of nature presuppose in the spirit of the investigator two qualities that are opposed: the grand view of an ardent genius, who embraces everything in one glance [*embrasse tout d'un coup d'oeil*], and the detailed attention of a laborious instinct that does not attach itself to any one point."[43] Shakespeare's genius lies in this two-fold ability, of noting every detail and ordering them with one glance.

While contemporaries may have been similarly inspired by the emerging historical consciousness and the increasingly differentiated world they inhabited, Shakespeare was able to *present* this multivalent world on stage in a *coherent* way. Thus despite the highly differentiated set of characters, locations, and events, Shakespeare's dramas display a unity, and it is in this that Shakespeare's genius lies. Herder thus locates Shakespeare's genius *in relation to* his time and place. Shakespeare's distinctiveness is not sought in either an a priori criterion (for instance, one that accords with Aristotle's account of tragedy), nor is it sought in a merely particularizing account of Shakespeare, i.e., in a character sketch or vignette, that fails to place Shakespeare in his time, and thus fails to see where his genius lies. The first approach (the approach assumed by the French) moves from the universal or a priori to the particular. In so doing, it overlooks or denies the particularity of the particular. The second approach, by contrast, focuses entirely on the particular, and thus fails to rise above the particular. Though the two approaches seem opposed, they share one important commonality: neither is able to mediate between the universal and the particular – neither is able to "embrace a hundred scenes" and "order them with a gaze."[44]

Herder's wording is telling here; as with Buffon, the emphasis is on both multiplicity and unity, on a hundred scenes and one gaze [*mit dem Blick*]. The implication is that the interpreter of a work of literature must proceed by reading each part after the other, i.e., linearly. The work, however, extends in many directions: each of its parts is in dialogue not only with the part that preceded it or the one that comes after it, but also with the opening as well as with the closing acts, for instance; the same holds for the characters, whose relations are not limited to those characters with whom they appear, etc. Thus although the reader proceeds sequentially, the meaning of the work, and the significance of each scene, cannot be grasped simply through a sequential reading. At the end of the reading, the interpreter realizes what unifies the various parts (which is not simply their sequential ordering), and must go back and consider

every scene, every act, and every character's words, in light of this unity. The reader must, in other words, re-present the parts, which are apprehended sequentially, non-sequentially, i.e., as partaking in and contributing to a multi-directional and meaningful whole. The reader must therefore find in the sequence a non-sequential unity, a unity that is not determined by the way in which we apprehend the work (or nature), but that nonetheless determines each part of the sequence. Of course, the work of interpretation is never completed. The reader must continue to move back and forth between the parts, and revisit her interpretation in light of a deeper understanding of the connections between the various parts, and of the ways in which they portray the whole from a different angle.

This hermeneutic circle, which Herder develops in his essays on literary and artistic interpretation, is, I believe, the basis for his parallel notion of a "circle" or a "world" that he introduces in his essay on language in order to explicate differences between animals, and between animals and humans, and that he goes on to invoke in the *Ideen* in order to explicate the relations between species, and between species and their natural environment.

HERDER'S NOTION OF A CIRCLE OR WORLD

Herder's notions of a circle or a world may have been inspired by Buffon's notion of "climate."[45] In contrast to climate, however, Herder's understanding of a circle takes account not only of temperature and geography, but also of the ways in which an animal (or a human) reflects and is reflected in its (his or her) world. A circle, for Herder, is not simply an external cause that effects the development of a species, but an inhabited world, which must be understood *in relation to* its inhabitants and vice versa. Every essential aspect of a world must be taken into account, because through understanding this world, we understand its inhabitants, and through understanding its inhabitants, we understand it. Herder's "world," like the world of an author, does not simply affect its inhabitants (i.e., the author), but is also influenced by them. Put differently, a world does not have a

solely uni-directional impact, but is a complex reality that reflects its inhabitants as much as it is reflected in them.

As noted, Herder first articulated his notion of a "circle" or a "world" in his essay on the origin of language and thus in response to the question posed by the Berlin Academy. Herder's aim in the essay was to develop a naturalistic account of the origin of language that resolved the difficulties faced by the naturalist positions of Condillac and Rousseau. It was Rousseau who first articulated these difficulties. In his *Discourse on the Origin of Inequality*, he noted that while human languages are artificial, and involve a certain amount of arbitrariness and convention, natural (i.e., animal) language does not.[46] Yet, if human language emerged from natural language, then, Rousseau surmised, it is necessary to explain this transition, this jump from the one to the other. Lacking any such explanation, it was not evident how a naturalistic account could be sustained.[47] Herder responds to this difficulty by following a different path than the one taken by Rousseau.

Rather than conjecturing an imagined past (as Rousseau had done), Herder begins by observing and describing what is before him,[48] with the aim of answering the question: what is it like to be human, and what might it be like to be animal? The first striking characteristic of the human being, he notes, is the fact that the human is "far inferior to the animals in strength and sureness of instinct, indeed … he … lacks what in the case of so many animal species we call innate abilities for and drives to art [*Kunsttriebe*]" (FHA 1, 711; HPW 77–8). Animals, by contrast, are born with specific strengths and capacities, which reflect and are reflected in their natural environment. There is an intimate reciprocity between the animal and its context, such that its abilities map onto what Herder calls the animal's "circle [*Kreis*]." He writes: "*Each animal has its circle* to which it belongs from birth, into which it immediately enters, in which it remains all its life and in which it dies." This circle corresponds to the animal's inborn capacities: "the sharper the animals' senses are, and the more marvelous the products of their art, then the smaller their circle is, the more

limited in kind the product of their art" (FHA 1, 712; HPW 78). There is an inverse proportion between the animal's capacities (its "drives and arts") and its circle: the larger the circle, the less defined, the less focused and distinct the capacities; the smaller the circle, the more defined and focused the capacities. This is evident in the case of bees, for instance, whose circle is the beehive; within the beehive, their "drives and arts" are a display of precision and efficiency. Once the bees exit the beehive, however, their distinctive and focused capacities, which are perfectly suited for the beehive, place them in a precarious position. Their capacities, so attuned to the beehive, are inversely unfit for the non-beehive environment. The same, Herder notes, obtains for other insects, such as the spider, whose "world" is its web, and whose capacities are perfectly attuned to this world – but hardly beyond it.

When considering those beings whose "circle" is much wider, the opposite appears to be the case. In contrast to bees and spiders, animals that roam, for instance, are far less focused, their capacities are not as clearly determined for or by their very specific context. This leads to a general decrease in the power and efficiency of their senses in relation to their surroundings. As Herder puts it, "on the other hand, '*the more numerous the functions and the destiny of the animals are, the more dispersed their attention is over several objects, the less constant their manner of life is, in short, the larger and more diverse their sphere is, then the more we see their sensuousness distribute itself and weaken*' " (FHA 1, 712; HPW 78). This dispersion of attention and weakening of the senses is most clear, Herder continues, in the case of the human, who lacks a circle or specific context altogether. The human being does not live in any one environment, but can inhabit a multitude of geographic contexts, and this is connected to the fact that human capacities are far less focused and not at all shaped or molded by needs that are specifically relevant to a particular context, or a particular function. Thus Herder goes on, "The human being has no such uniform and narrow sphere where only a single sort of work awaits him; a world of occupations

and destinies surrounds him." For this reason, "His senses and organization are not sharpened for a single thing; he has senses for everything and hence naturally for each particular thing weaker and duller senses" (FHA 1, 713; HPW 79).

The difference between humans and animals, then, has to do with the human lack of a specific circle, and with what that entails in terms of innate capacities. In contrast to animals, humans lack "direction," which means that the human being has "*no drive to art, no skill for art* – and, one thing which is more especially relevant here, *no animal language*." In other words, the human being, in contrast to animals, is not born with innate capacities that fit its environmental needs; the human being, one can say, suffers from a poverty of innate skills, one of which is animal language. Thus while animals certainly have language, as Herder notes, their language is something with which they are born; it is an instinct. By contrast, humans lack innate skills, including animal language. This is the real difference, according to Herder, between humans and animals, and it is the reason why human language differs from animal language. The former is not instinctual; it must be acquired, or as Herder puts it "invented" (FHA 1, 722; HPW 87).

By focusing on context, and seeing the animal and the human in relation to its context, Herder is able to maintain a naturalistic account of language, that is, an account that does not rely on divine origins, without, however, succumbing to the difficulties faced by Condillac's and Rousseau's positions. By invoking the notion of a circle or a world, and seeking to understand the individual animal in relation to its world, to its lived environment, Herder is doing nothing less than "explaining the one through the other," i.e., seeing how the context is reflected in the individual animal and, in turn, how the individual animal contributes to its context. By moving back and forth between the animal and its circle, Herder discerns an indelible unity and reciprocity between the two, and, in this way, begins to recognize important differences between various animals and between humans and animals. These differences are not based on

an a priori account, or a general perspective, nor are they based on the mere accumulation of data. Rather, the differences emerge through hermeneutic work, through seeing the parts in their relation to the whole and, in turn, seeing how the whole is manifest in the parts. By relying on this methodology, Herder does not need to offer a conjectural history of humanity, nor does he need to account for a "jump" from natural to artificial language. Rather, Herder's methodology allows him to focus on what is before him, and locate meaning – an indelible unity or reciprocity – in and through what he sees.

While Herder's introduction of the notion of a world provides a solution to the question concerning the origin of language, its significance goes beyond the 1772 essay. Herder invokes the notion of a world in the *Ideen*, where he seeks to develop a natural history of humanity, which commences with a natural history of non-human nature. In seeking to understand the structure of birds, for instance, he does not focus on one aspect of its structure, nor does he get lost in its various aspects. Instead, he focuses on the relation between the structure of the bird and its environment, its world. "The bird flies in the air," such that "every divergence of its form from the build of land animals can be explicated through its element." By contrast, "The fish swims in water; its feet and hands are grown into fin and tail: it has only little articulation of its members" (FHA 6, 75–6).

Just as in the language essay, so here Herder sees an integral connection between the animal and its environment. The relation is, importantly, not merely superficial. Herder's point is that the animal's *very structure*, its build [*Bau*], is in dialogue with its environment, such that this structure both serves its environmental needs and is served by its environment (FHA 6, 73). Furthermore, for Herder, recognizing the ways in which the bird is in dialogue with its context, and comparing it to fish and terrestrial animals, is an important means by which to discern how the bird both differs from and reiterates the structure of other animals. In other words, by grasping the bird in its environment, and comparing the relation between its structure and environment to that of the fish and other

animals, one begins to understand not only the bird's relation to its environment, but also the bird's relation to other animals, and thereby discern both their differences and similarities, and thus glean a continuity in nature that does not imply identity.

CONCLUSION: HERDER'S HERMENEUTICS OF NATURE AND ITS IMPACT

Herder has been credited with providing a more "dynamic" view of nature, a view that ultimately led to the foundation of geography as a discipline in the nineteenth century.[49] Such a dynamic perspective implies, above all, a relation of reciprocal determination between the natural world and its inhabitants. While this perspective was most comprehensively carried out by Alexander von Humboldt, my claim is that Herder's notion of a world – developed through his hermeneutic theory and practice – played an essential role in the development of dynamic natural history. It is thus not surprising to recognize a fundamental affinity between Herder and Humboldt's aims.[50] What distinguishes Herder and Humboldt from their predecessors is their disinterest in classification, and by contrast, their interest in grasping a "world," an inhabited reality that is reflected in the very structure of its inhabitants. This enabled both of them to move beyond superficial descriptions of climatic influence to the view that the natural world is an effecting and effected reality, transforming and transformed by its inhabitants. Or, to conclude with Humboldt's own words:

> I was passionately devoted to botany, and certain parts of zoology, and I flattered myself that our investigations might add some new species to those which have been already described; but preferring the connection of facts which have been long observed to the knowledge of insulated facts, although they were new, the discovery of an unknown genus seemed to me far less interesting than the observation of the geographical relations of the vegetable world, or the migration of social plants, and the limit of the

height which their different tribes attain on the flanks of the Cordilleras.[51]

NOTES

1 This is evident, for instance, in the recent special issue of the history of science journal *Isis* which focuses on the influence of the humanities on the development of the natural sciences. Rens Bod and Julia Kursell, eds., "The History of Humanities and the History of Science," *Isis* 106 (2015): 337–40.

2 In their article on the history of science and the history of philology, Lorraine Daston and Glenn W. Most disagree with "current ways of conceptualizing the history of science and the history of the humanities," which "have imposed anachronistic divisions among the great regions of knowledge and thereby obscured commonalities that are deeper, broader, and more enduring than this or that case study about specific instances of interaction, influence or borrowing would suggest." Lorraine Daston and Glenn W. Most, "History of Science and History of Philologies," *Isis* 106 (2015): 381–2.

3 As Daston and Most put it: "philological practices of grammatical analysis, collation and comparison of texts, glosses and commentaries, indices and tabulations, and perhaps most significant of all, detection and correction of all manner of inconsistencies in form and substance, were (and in some cases, still are) the foundation for many scientific practices, especially in medicine and natural history." Daston and Most, "History of Science," 384.

4 Brian Ogilvie, for instance, argues that the work of comparing texts in the Renaissance influenced the work of comparing flora and fauna and developing taxonomies. Brian Ogilvie, *The Science of Describing: Natural History in Renaissance Europe* (Chicago: University of Chicago Press, 2006). Similar research has been undertaken to demonstrate the significance of note-taking practices in philology and the emergence of "field work" in natural history in the Early Modern Period. See Ann Blair, "The Rise of Note-taking in Early Modern Europe," *Intellectual History Review* 20 (2010): 303–16.

5 Not all eighteenth-century scholarship on this topic is recent, though the majority is. Two exceptions are Peter Reill's 1992 article on historical

thought in Germany and Great Britain, which offers a large brush-strokes account of the development of natural history, arguing that it must be understood in relation to the development of historical thought more generally. Peter Hanns Reill, "Buffon and Historical Thought in Germany and Great Britain," in *Buffon 88*, ed. Jean Gayon (Paris: Vrin, 1992). Hans-Dieter Irmscher's 1984 article on Herder's philosophy of history notes Herder's use of biological metaphors to describe historical phenomena, but does not consider whether Herder's methodology reflected insights gained from natural history. Hans-Dietrich Irmscher, "Grundfragen der Geschichtsphilosophie Herders bis 1774," in *Bückeburger Gespräche über Johann Gottfried Herder 1983*, ed. Brigitte Poschman (Rinteln: Bösendahl, 1984).

6 This recent work strongly contrasts with earlier approaches to historicism. See for instance, Friedrich Meinecke, *Historism: The Rise of a New Historical Outlook*, trans. J. E. Anderson (London: Routledge & Kegan Paul, 1972 [1936]). Though in his 1992 article Peter Reill (see n. 5 above) emphasizes the mutual influence of the natural and the human sciences, his earlier book on historicism does not. Peter Hanns Reill, *The German Enlightenment and the Rise of Historicism* (Berkeley: University of California Press, 1975). For more recent work which at least acknowledges the role of the natural sciences in the development of historicism, see Frederick Beiser, *The German Historicist Tradition* (Oxford: Oxford University Press, 2011), 6–10 and John Zammito, "Philosophy of History: The German Tradition from Herder to Marx," in *The Cambridge History of Philosophy in the Nineteenth Century (1790–1870)*, ed. Allen W. Wood and Songsuk Susan Hahn (Cambridge: Cambridge University Press, 2012). Beiser's changing perspective on the relation between historicism and natural science epitomizes these changing attitudes. While in a 2007 article he argues that there is a difference in kind between the methods of the historical and natural sciences, in his 2011 book on historicism, he notes that now he "reject[s] this distinction." The reasons are twofold. First, very few historicists regarded the methods of history as distinct from those of the natural sciences. And second, Beiser claims, "historicism *grew out of* a naturalistic program in the Eighteenth Century," namely the attempt to create a "science of man" by applying Newtonian laws and methods to history (Beiser, *The German Historicist Tradition*, 3, note 5, and 6).

7 Though one can argue that historicism and hermeneutics are very closely associated, maybe even identifiable (as Gadamer claims), I follow Beiser who distinguishes the two because many historicists were not hermeneutic thinkers, and many hermeneutic thinkers did not aim to formulate a general theory of history (Schleiermacher, for instance). Beiser, *The German Historicist Tradition*, 10. Furthermore, studies of historicism have generally not focused on the hermeneutic tradition, leading to this lacuna.

8 See for instance Thomas M. Seebohm, *Hermeneutics: Method and Methodology* (Dodrecht: Kluwer, 2004).

9 Gadamer is generally uninterested in examining scientific practices, and more interested in philosophizing about science more generally. Furthermore, his account of the emergence of hermeneutics is largely one-sided, identifying, for instance, romantic hermeneutics with the "aesthetic attitude," which Gadamer rejects in favor of his own version of universal hermeneutics. Gadamer's unreliable history of hermeneutics should thus not serve as a guide to its historical development. See Kristin Gjesdal, *Gadamer and the Legacy of German Idealism* (Cambridge: Cambridge University Press, 2009). For an account of positivist and post-positivist science, see John Zammito, *A Nice Derangement of Epistemes: Post-Positivism in the Study of Science from Quine to Latour* (Chicago: University of Chicago Press, 2004).

10 Michael Forster's chapter on Herder's philosophy of language, which also considers Herder's hermeneutics, is a case in point. Forster notes that for Herder there are deep and intrinsic methodological similarities between the interpretation of historical texts and scientific research. Forster's chapter does not, however, consider the ways in which Herder employs or develops scientific methodology in light of his hermeneutics, or the extent to which Herder's scientific knowledge (and his sources) may have influenced his hermeneutics. Rather, Forster simply emphasizes a methodological parallelism between the two. Michael N. Forster, *After Herder: Philosophy of Language in the German Tradition* (Oxford: Oxford University Press, 2010), 45–50 and 140–1.

11 See Rudolf Makkreel, *Imagination and Interpretation in Kant: The Hermeneutic Import of the Critique of Judgment* (Chicago: University of Chicago Press, 1990). Though Makkreel is mostly interested in

the first part of the *Critique of the Power of Judgment*, he does claim that Kant's notion of teleological judgment is part and parcel of the larger hermeneutic/interpretive work developed earlier in the book, making note, for instance, of the fact that for Kant the idea of life has a descriptive as opposed to explanatory role, which is what makes Kant's method – *pace* Makkreel – hermeneutic. See esp. 99–103.

12 On the reasons for Kant's rejection of the use of reflective judgment in science, and how he differs in this regard from Herder, see my "Understanding as Explanation: The Significance of Herder and Goethe's Science of Describing," in *Herder: Philosophy and Anthropology*, ed. Anik Waldow and Nigel de Souza (Oxford: Oxford University Press, 2017), 106–24.

13 What Kant designates as "proper science," in contrast to "improper science." For an account of this distinction, see my "Analogy, Natural History, and the Philosophy of Nature: Kant, Herder and the Problem of Empirical Science," *Journal of the Philosophy of History* 9 (2015): 240–57, esp. 251–3.

14 On the "liberalization" of the sciences, see John Zammito, *Kant, Herder and the Birth of Anthropology* (Chicago: University of Chicago Press, 2002), 222–3. Zammito is following Sergio Moravia, who argues that it was through this liberalization that anthropology emerged as a distinctive field. Sergio Moravia, "The Enlightenment and the Sciences of Man," *History of Science* 18 (1980): 247–68. Stephen Gaukroger's account of the "collapse" of seventeenth-century mechanical-mathematical philosophy demonstrates the reasons for this opening up of science, and the ways in which various thinkers responded to this opening up (above all, through the proliferation of new scientific disciplines and objects of study). Stephen Gaukroger, *The Collapse of Mechanism and the Rise of Sensibility: Science and the Shaping of Modernity 1680–1760* (Oxford: Oxford University Press, 2012).

15 Though modern hermeneutics is often identified with Schleiermacher, Herder is now recognized as a leader in hermeneutic thought and a major influence on Schleiermacher's hermeneutics and Romantic hermeneutics more generally. On Herder's influence on Schleiermacher, see Forster, *After Herder*. On his influence on the Romantics, see Michael N. Forster, *German Philosophy of Language: From Schlegel to Hegel and Beyond* (Oxford: Oxford University Press, 2011). According

to Forster, it is impossible to imagine Romantic hermeneutics (including Schleiermacher's) without Herder.

16 Georges-Louis Leclerc, Comte de Buffon, *Histoire naturelle, générale et particulière* (36 vols.) (Paris: L'Imprimerie royale, 1749–1778), vol. 1 (1749), 20. All references to the *Histoire naturelle* will be abbreviated (*HN*), followed by a volume number, date and page.

17 Buffon, *HN* 1 (1749), 16.

18 For an account of Buffon's distinction between "real" and "abstract" truths, see Philip Sloan, "Buffon, German Biology and the Historical Interpretation of Biological Species," *The British Journal for the History of Science* 12 (1979): 109–53.

19 Buffon, *HN* 1 (1749), 30.

20 See Philip Sloan, "The Buffon-Linnaeus Controversy," *Isis* 67:3 (1976): 356–75; here: 370.

21 Buffon, *HN* 14 (1766), 22–3. Quoted in Jacques Roger, *Buffon: A Life in Natural History* (Ithaca, NY: Cornell University Press, 1997), 293.

22 An earlier version of the *Pensées* was published in late 1753 under the title *De l'interprétation de la Nature*; however, the book as it is known today was published in early 1754 under the new title.

23 Denis Diderot, *Pensées sur l'interprétation de la Nature* (Paris, 1754), 6, paragraph II; *Thoughts on the Interpretation of Nature and Other Philosophical Works*, trans. Lorna Sandler (Manchester: Clinamen Press, 1999), 35.

24 Diderot, *Pensées* 18–19, paragraph IV; *Thoughts*, 37–8.

25 Diderot and Buffon also emphasized the role of the imagination in grasping whole objects. See Jessica Riskin, *Science in the Age of Sensibility: The Sentimental Empiricists of the French Enlightenment* (Chicago: University of Chicago Press, 2002), 98, 210–11. On the importance and widespread use of analogy in eighteenth-century life science, see Peter Hanns Reill, *Vitalizing Nature in the Enlightenment* (Berkeley and Los Angeles: University of California Press, 2005).

26 Buffon, *HN* 1 (1749), 50–1.

27 Buffon, *HN* 7 (1758), 22.

28 Buffon famously claimed in the *Histoire naturelle* that "a series of like facts or, if you wish, a frequent repetition and an uninterrupted succession of the same events, make up the essence of physical truth: what one calls physical truth is thus no more than a probability,

but a probability so great that it equals certainty." Buffon, *HN* 1 (1749), 55.

29 Zammito, *Kant, Herder and the Birth of Anthropology*, 229.

30 See Eugen Sauter, *Herder und Buffon* (Rixheim: F. Sutter & Cie, 1910), 6–11. Sauter's account of the relationship is, however, missing the first reference Herder makes to Buffon, namely in his 1768 essay on Thomas Abbt (Sauter claims that the first mention is from the 1769 *Journal meiner Reise*). Furthermore, Sauter maintains that it was through Hamann that Herder became familiar with Buffon. While this may be true, given the popularity of the *Histoire naturelle* and its German translation (by Abraham Gotthelf Kästner in 1760), Herder may have come to Buffon through other sources.

31 Zammito, *Kant, Herder and the Birth of Anthropology*, 332.

32 FHA = Johann Gottfried Herder, *Werke in zehn Bänden*, ed. U. Gaier et al. (Frankfurt am Main: Deutscher Klassiker Verlag, 1985–1998).

33 HPW = *Herder: Philosophical Writings*, ed. and trans. Michael N. Forster (Cambridge: Cambridge University Press, 2002).

34 On the influence of food and climate on the degeneration of species, see Philip Sloan, "The Idea of Racial Degeneracy in Buffon's *Histoire naturelle*," *Studies in Eighteenth-Century Culture* 3 (1973): 293–321. Thanks to Jennifer Mensch for directing me to this article.

35 According to Jacques Roger, Buffon's notion of "climate" changed over the years, such that by 1775, it denoted temperature alone. Roger, *Buffon*, 415.

36 Buffon, *HN* 4 (1753), 215.

37 Roger, *Buffon*, 178; Sloan, "Racial Degeneracy," 307–9.

38 A similar point has been made by Chenxi Tang, who argues that Herder's view of nature as "a dynamic system of forces" strongly contrasts with "a static surface lending itself to schematic description in the manner of Bergman, Buffon, and other descriptive geographers." Chenxi Tang, *The Geographic Imagination of Modernity: Geography, Literature and Philosophy in German Romanticism* (Stanford: Stanford University Press, 2008), 108.

39 Herder employs the same methodology in speaking about the natural world in *Ideen zur Philosophie der Geschichte der Menschheit*. Thus he writes that in order to understand connections between species and varieties, the natural historian must "explain the one through the other [*Ein Exemplar das andre erkläre*]" (FHA 6, 73).

40 SWA = Herder, *Selected Writings on Aesthetics*, ed. and trans. G. Moore (Princeton: Princeton University Press, 2006).
41 SW = *Johann Gottfried Herder Sämtliche Werke*, ed. B. Suphan et al. (Berlin: Weidmann, 1882–1909).
42 For a more comprehensive account of the main differences between ancient Greek and Shakespearean tragedy according to Herder, see Forster, *After Herder*, 172. See also Herder's critique of Winckelmann's assessment of ancient Egyptian and ancient Greek sculpture. According to Herder, Winckelmann's account fails to recognize a fundamental difference in the aims (and thereby in the genre) of Greek and Egyptian sculpture, precisely because it is divorced from the culture in which the respective sculptures emerged. As Forster notes, Winckelmann does not only fail in his interpretation of these works, but also in his valuation of them. Forster, *After Herder*, 173–5.
43 Buffon, *HN* 1 (1749), 4.
44 For a detailed account of how Herder's hermeneutics mediates between these two (insufficient) approaches, see Kristin Gjesdal, *Herder's Hermeneutics: History, Poetry, Enlightenment* (Cambridge: Cambridge University Press, 2017).
45 See Sauter, *Herder und Buffon*, 22–3.
46 As Avi Lifschitz notes, Rousseau identified three main challenges with the naturalistic account, including the problem of how convention can be achieved without consent, which requires speech. See Avi Lifschitz, *Language and Enlightenment: The Berlin Debates of the Eighteenth Century* (Oxford: Oxford University Press, 2012), esp. 78–80.
47 As Lifschitz recounts, "Rousseau's exasperation at the difficulties posed by the human invention of language became a focal point for conservative authors, from Beauzée to de Maistre," and ultimately led to Süßmilch's argument for the divine origin of human language. Lifschitz, *Language and Enlightenment*, 79; see also 83–7.
48 His intention is made explicit when he states that, unlike previous philosophers who have sought but failed to offer a causal explanation of various human and animal capacities, his aim will be to offer "observations [*Bemerkungen*]" which can at least "throw much light on the doctrine of the human soul" (FHA 1, 712; HPW 78).
49 On the emergence of "dynamic" natural history and its influence on modern geography, see Tang, *The Geographic Imagination of Modernity*, ch. 1. Tang maintains that Herder was the first to contribute

to the dynamization of natural history (108). Eugen Sauter similarly claims that Herder played an important role in the emergence of modern geography, above all through influencing the geographer Carl Ritter. Sauter, *Herder und Buffon*, 88.

50 Otto Heller, one of Humboldt's first biographers, describes the relation between Herder and Humboldt in the following way: "What Herder had enthusiastically attempted in the 'Outlines of a philosophy of the history of mankind,' Humboldt wants to do scientifically in 'Kosmos': to connect the development of the culture of the human race to its native soil." Quoted in Nicolaas A. Rupke, *Alexander von Humboldt: A Metabiography* (Chicago: University of Chicago Press, 2008), 71. Hanno Beck, another Humboldt biographer, contends that the title of Humboldt's *Ideen zu einer Physiognomik der Gewächse* (1806) comes from Herder's *Ideen*. Hanno Beck, "Kommentar," to *Ideen zu einer Physiognomik der Gewächse* by Alexander von Humboldt (Darmstadt: Wissenschaftliche Buchgesellschaft, 1989), 287–328. Annette Graczyk also claims that Humboldt's notion of a "general physical geography of plants" originates in Herder's statement, in the *Ideen*, that his goal is to develop a "general botanical geography of human history." Annette Graczyk, *Das literarische Tableau zwischen Kunst und Wissenschaft* (Munich: Wilhelm Fink, 2004), 290–1.

51 Alexander von Humboldt and Aimé Bonpland, *Personal Narrative of Travels to the Equinoctial Regions of America, During the Years 1799–1804*, vol. 1, trans. and ed. Thomasina Ross (London: Bohn, 1852), x.