

Visualizing Elemental Ontology in the *Livre des propriétés des choses*

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A major challenge for the humanities and social sciences, according to Bruno Latour, is the need to supersede the model of cultural diversity, which he does not see (as we might expect) as a positive, open-minded stance that valorizes difference. Instead, he holds that to speak of cultural diversity is to suggest that difference is only possible on the level of concepts and vocabulary, stories and beliefs, and to assume that there are objectively knowable truths about the material world that are immune to variation (*Inquiry* 20). In its place, he proposes a model of ontological pluralism, by which he means the coexistence of a variety of systems in which different phenomena, objects, and access routes to reality intermingle. This approach entails not just seeing differently but also seeing different things. Latour suggests that anthropology lead the way, since recent work in the field has sought to shun conventional Eurocentric distinctions—for instance, between natural and supernatural—and to allow for other ontologies to emerge (*Inquiry* 200; Holbraad and Pedersen). With its ethnographer protagonist, Latour's *Inquiry into Modes of Existence* provides a powerful model for understanding Nonmodern and non-European ontologies that might otherwise be dismissed as primitive, fanciful, or pseudoscientific. The *Inquiry* argues for the virtues rather than the limitations of these ontologies. As Martin Holbraad and Morten Axel Pedersen argue, Latour's respect for other ontologies suggests that we approach them as radically different realities that require the suspension of our own ideas about what the world is. Such an approach would involve the reshaping of our most important categories of thought (the

human, the animal, the body, the subject, the object, and so on) and avoiding the tendency to protect Modern Western ontologies from challenge.

This essay proposes to interrogate and extend Latourian ontology by placing it in dialogue with medieval textual and visual cosmologies, notably those in Jean Corbechon's fourteenth-century French translation of Bartholomaeus Anglicus's encyclopedia *De proprietatibus rerum* (ca. 1240), the *Livre des propriétés des choses*. In doing so, I show not only how Latour's assumptions about ontologies based on substance and matter can be nuanced, but also how the encyclopedia benefits from being interpreted in terms of ontology. General definitions of the late medieval encyclopedia focus on its epistemological dimensions. For example, scholars argue that these works provide complete "cycles" of knowledge, containing everything worth knowing; that encyclopedias compile inventories of creation or ideal libraries; that they elaborate hierarchical orderings of knowledge involving division, compilation, and finding aids; and that they are didactic and sometimes moralizing in nature, characterized by respect for authorities and tradition (Draelents; Fowler; Franklin-Brown; Meier; Ribémont, "Definition"). The *Livre* certainly exhibits all these qualities. However, if we read it with Latour's ontological pluralism in mind, we see how its epistemological organization shapes its central ontological argument, namely that the combination of the four elements (fire, air, water, and earth) within all animate and inanimate beings explains their abilities and behaviors. Elements have significant agency in the *Livre's* cosmological network: not only do they bridge the differences between forms and bodies and instantiate networks of relationships between all aspects of the created world; they also link angels, humans, animals, plants, and stones through ideas of elemental substance and matter. As I outline below, Latour dismisses ontologies based on ideas of substance and matter as highly reductive, but the *Livre* shows that in a medieval setting such ontologies were, on the contrary, both dynamic and flexible.

In addition, the *Livre* offers a model of translation in Latour's sense of the term, meaning modes of mediation that connect diverse actors that are separated by an irreducible difference or "hiatus" and that would not otherwise communicate with or affect one another. Latour's use of the term "translation" takes interlingual transfer as a metaphor for all mediation, for the creation of links between diverse beings—a process that modifies the beings in question since, as with translation between languages, something is always lost or altered in the process. In the *Inquiry*, Latour's ethnographer protagonist works to cross the hiatuses between beings, leading to a final moment where Latour reminds Moderns confronting ecological crises how much they share with nonhumans:

That tree, this fish, those woods, this place, that insect, this gene, that rare earth: are they my ends or must I again become an end for them? A gradual return to the ancient cosmologies and their anxieties, as we suddenly notice that they were not all that ill founded. (*Inquiry* 455)

The principal task of the *Inquiry* is thus to mediate between largely human realms of activity; Latour's "modes of existence" include the economic, legal, political, scientific, and literary dimensions of life. Two of Latour's modes are key to my argument: [REF], the mode of referential or scientific knowledge, and [FIC], the mode of fictional or literary being. For Latour, all modes employ fictions to communicate their own reality. Scientific knowledge, in particular, is only comprehensible when placed into a narrative peopled by fictional beings; thus, the combination of [REF] and [FIC] gives an idea of the world and its beauty (*Inquiry* 250). The *Livre*, an "old cosmology," uses crossings of [FIC] and [REF] to mediate between beings, putting humans into contact with beings at different ontological levels, linking them to angels, plants, or animals.

The text of the *Livre* is a translation in the conventional sense of the term, as a rendering of a Latin work into the vernacular. Extant in over 300 manuscripts in its Latin form, the encyclopedia was translated by Corbechon in 1372 for King Charles V of France. Known as the *Livre des propriétés des choses* in its French rendering, it was popular with the

Francophone nobility of the late Middle Ages and survives in at least 45 manuscripts. Corbechon does not only produce a lexical equivalence in French for the Latin text, however; he also adds a prologue to his translated text and intervenes throughout to explain etymologies, correct attributions, and occasionally make comments characterized by nationalist or royalist zeal (Ribémont, “Corbechon”). His translation thus transfers knowledge from an erudite Latin scientific culture to the vernacular: whereas the Latin original provided material for sermons, the French version offered a guide to Aristotelian natural history for the secular elite. As a translation, the *Livre* is situated precisely within a changing political situation, as the rendering of great scientific texts into French represented both an assertion of sovereignty on the part of Charles V and an attempt to raise the vernacular to the level of Latin.

The differences between the Latin and French versions, well documented by Bernard Ribémont (“Corbechon”), are not my subject here. Rather, I examine how the French version, like its Latin source-text, translates modes of existence, using not only the elements but ideas from linguistics and physics to mediate divine, human, animal, bestiary, and lapidary realities. The encyclopedia’s title, which refers to the “properties of things,” already signals ontological intent. The *Livre* purports to synthesize “all knowledge,” placing on an equal footing what we—in, precisely, the separation and hierarchization of domains that Latour’s *Inquiry* criticizes—would term ideas, stories, legends, empirical observations, philosophical concepts, or theological arguments. The *Livre*, a great act of translation in the Latourian sense, creates a philosophical system that separates the beings of the universe into categories, while asserting that those categories remain dynamically interrelated as a consequence of the contiguity of matter. The encyclopedia’s organization into an ordered sequence of books, shaped around the four elements, both crystallizes its ontology and works as a translation in itself, creating connections between beings by bringing out their similar composition: all

matter is made up of the elements. A further act of translation comes about with the manufacture of French *Livre* codices, which took advantage of the new affordances of the late medieval luxury codex, particularly the increased possibilities for illustration. Unlike the Latin manuscripts, the French exemplars are frequently illustrated, so that new material forms led to new modes of visualizing knowledge. The visual programs in luxury manuscripts of the *Livre* widened access to the ontologies of *De proprietatibus rerum* and extended its work of translation. The images function both epistemologically and ontologically, rendering the work's structure, and thus its ontology, in visual terms as well as restructuring relationships through the use of circles, grids, and other visual devices, which can either reduce or increase the shock of the text's ontological contentions, depending on the context.

In what follows, I first outline a reading of the *Livre*'s ontology in order to show how it might challenge Latour's dismissal of concepts of substance and matter and to outline its virtues in terms of the links it creates between all existents. I then turn to two luxury manuscripts that represent divergent visual programs of the *Livre*'s ontology, the one (Paris, BnF, fr. 216) seeking to reassure humans of their superiority and cognitive mastery, the other (Paris, BnF, fr. 135 and 136) troubling their sense of autonomy and authority by stressing that human bodies are made of the same stuff as the rest of the universe. Finally, I argue that as a transformative visual and textual encounter with knowledge, *Livre* manuscripts invite their readers to engage with a universe that looks very Latourian and to envision their place within an ontology that prioritizes connections between living and nonliving beings.

The *Livre* and Latourian Thought

The *Livre* does not simply organize knowledge, but rather embodies a world-system that emphasizes the interconnectedness of phenomena through arguments about the invisible substances, relationships, and forces that characterize visible forms. It might be tempting to

describe the *Livre* as a representation of the world, but we should bear in mind Latour's critique of the conventional opposition between, on the one hand, the material, natural, "real" world, and, on the other, the realm of language effects and "symbolic" realities or representations (*Inquiry* 235). Both "language" and "matter" are monstrous, reified amalgams. The dominance of "language" in cultural studies, with its obsessive focus on the "speaking subject," proves particularly hard to undo. Yet any study of the *Livre* in terms of linguistic play, of the blurring of sources and authorities, takes us only so far in our understanding. To follow Latour, we would also need to account for the *Livre*'s intervention in material realities: the text does not only transcribe the natural world into language; in the process, it also mediates relationships between beings.

There are, nonetheless, some difficulties with applying Latourian concepts to the *Livre*. Though Latour's aim of overcoming the Modern opposition between nature and culture is laudable, he seems to assume that nature and culture were completely indistinct in premodern culture (*We* 140). It would be more accurate to say that the boundaries between them were differently placed and policed (Robertson 15). Moreover, despite his call for ontological pluralism, Latour attacks quite stridently the assumptions that shape Aristotelianism (Harman), a key mode for premodern ontology and the predominant influence on the *Livre*. Aristotle's sway is particularly strong in the sections of the *Livre* that treat substances, bodies, and senses; and throughout the text, nature is not represented as a veiled mystery but rather as an entity that speaks to us in comprehensible terms, provided we learn its language. By contrast, Latour critiques the Aristotelian articulation of nature as teleological, claiming that its basis in a notion of substance involves the assumption that each thing already contains what it will become. Our Modern idea of nature likewise remains, for Latour, a mishmash of Greek politics, French Cartesianism, and American parks (*Politics* 5), and a "premature unification of all existents" (*Inquiry* 99). He also dismisses the notion of

“matter” as a catch-all concept that emerges with Descartes (who is critiqued in the *Inquiry* as the father of “Modern” thought) as well as the notion of “form,” which likewise provides only a reductive way of describing the shape of existents. Finally, “substance” leads to the mistaken idea that reality lies “behind” appearances, that a being’s essence can be grasped independently of its praxis and its mediations by other beings, and that there is some essential “stuff” at the heart of a creature that remains unchanged whatever transformation the exterior undergoes. Instead, Latour highlights changes in reproduction: substance, matter, and form do not just magically subsist, but are repeatedly recreated.

In all of this, Latour underestimates the capacity of Aristotelian ontology to offer great elasticity, which is demonstrated by its repeated reinvention in the context of thirteenth-century natural philosophy. “Nature” and “substance” provide transcendent metaphors in medieval philosophical texts, but they do not govern or determine everything monolithically. Rather, they open up vast and varied paths to translating, or mediating between, beings. While Aristotelian ontology constructs neat categories into which individual beings can be placed, there are also countless examples of hybrid beings that defy categorization or that share features across ontological boundaries. The *Livre*’s text and images participate in this late medieval reworking of Aristotelian ontology. They frame nature’s manifold processes of generation and corruption in a way that attenuates differences between beings, developing a narrative about the visible and invisible “properties” of all things, rather than reifying matter and substance. Matter is not inert but generative and mysterious, forming and affecting bodies in ways that are portrayed as difficult to grasp. Scientific and linguistic truths are united in an Aristotelian model for gathering and translating the diversity of creation.

The author’s prologue, which adopts an Aristotelian mode, thus advises that we first consider the visible before asking what God has veiled, noting that theology uses poetic figures to highlight similarities between invisible and visible things. In a seemingly inverse

movement, the structure of the *Livre* then uses an Aristotelian version of the ladder of being, moving down from God. The first book, on God, uses linguistics and physics to express its ontological arguments. The Trinity is not divided in its essence; it is only multiple in terms of the properties of people, thanks to the activity of appropriation (the attribution of names and qualities that distinguish the three persons). Abstract substantives, such as “essence” and “deity” cannot be associated with verbs, nouns, or prepositions, or else the proposition would be false (for example, if one were to claim that the divine essence engenders or was engendered). Thus, the uniqueness of God is translated as a grammatical concept first and foremost. This linguistic focus continues in the second book, on angels, but fades later, probably because other modes of existence do not stretch human language as much. Although angels are described as having no bodily form, they are nonetheless always visually depicted as embodied, suggesting that the material world provides a means of understanding the immaterial one. In the central part of the *Livre*, we then return to the heavens to descend again through the elements. Before its division into elements, substance was without color, quality, or quantity. Accounting for its subsequent division, the *Livre* follows another downward movement through creation, from the highest element (fire) to air (and thus birds), water (and thus fish) and finally earth (and thus stones, plants, and animals). The final book considers the accidental qualities of matter (including number), completing the *Livre*'s move downward, from the most celestial to the most terrestrial dimensions of existence.

The *Livre* thus offers a highly Latourian ontology, one that connects everything in the universe. It is the elements that form the minimal building blocks of all matter and the first subdivision of substance, and they provide the *Livre*'s principal mode of interrelating all created things. The elemental ontology of the text is not reductive or simple, and substance does not remain a reified abstraction but rather splits into dynamic, interrelated, and productive units. This means that, as in Latourian ontology, agency is very diffuse. It is worth

detailing the complexity of this model as it plays out in the second half of the text. Book X explains that the elements are opposed, though they nevertheless work in concert due to the influence of the planets. The sky is dominated by fire and characterized by the stars and planets that inhabit it; air contains meteorological phenomena as well as birds; water exists in different forms, and houses fish; and finally, earth takes up the most space, described in terms of types of land with different dispositions and affordances in Book XV. Books XVI–XVIII describe the earth in terms of stones, plants, and animals. The elements, in turn, are further subdivided into the four elemental qualities—two active (heat and cold) and two passive (moisture and dryness)—that permeate nature:

ils sont quatre elemens et quatre qualites dont tout corps est compose materiellement et especialment le corps humain lequel est le plus noble entre ceux qui sont faiz des elemens et le plus noblement compose et ordonne come propre instrument de l'ame raisonnable. (Paris, BnF fr. 9140, fol. 35r)

there are four elements and four qualities of which each body is composed materially and especially the human body, which is the noblest among those made of the elements and the most nobly composed and ordered, as the fitting instrument of the reasonable soul.

These elemental qualities can be broken down, too. Heat, for example, subdivides into solar (celestial) heat, which is generative, and corrosive and destructive heat, which is generated on earth. Heat can also release elements, turning them into their elemental “superior” (earth would become water, water air, and air fire). Heat has contradictory effects, as do the other qualities, cold also being both corrosive and generative. The agency of the elements is thus everywhere, but its effects are so diverse that it is difficult to track.

Next, the bodily humors—blood, phlegm, yellow bile (choler), black bile (melancholy)—are compounds of these elemental qualities. The combined action of cold and moist qualities leads to phlegm; hot and moist to blood; hot and dry to choler; and cold and dry to melancholy. The humors also correspond to temperaments; hence their description is accompanied in some *Livre* manuscripts by an illustration of four people: the sanguine, the

phlegmatic, the choleric, and the melancholic. In this ontological network, stones and metals are also related to the elements and the body: gold cannot be reduced by fire and helps against leprosy and melancholia. Elemental qualities are found in animals as well as humans, but in simpler forms (without the humors, which are compounds). For example, Book XII tells us that birds have less earth in their complexion than other animals because air is imprisoned in their feathers. More surprising is Book XVIII's gloss on the elephant: "Il n'est beste de si longue vie et c'est por la complexion que est semblable a l'air" ("There is no beast that lives as long, and that is because of its complexion, which resembles air"; fol. 345v). Trees can grow more or less high, depending on the relative amount of air and earth in their makeup. In the *Livre*, as these examples show, the nature, complexion, and properties of every animate body are explained in terms of the combination of elements, qualities, and humors within it, linking all bodies together into a giant ontological system.

These sections reveal that explanations in terms of substance and matter—the sort of explanations Latour dismisses—have explanatory powers and complexities he does not acknowledge. The elements are not static categories but intertwined, dynamic networks, linking and differentiating all created beings. The privileging of elements and elemental qualities in the *Livre* recalls Latour's caution that we should not use Ockham's razor to limit the number of beings or to reduce the range of agents. We should instead sketch a network in full, including invisible forces and technologies (*Inquiry* 212). A variety of elemental forces form meaningful parts of the *Livre*'s cosmology; and when we take this text seriously, we are led to question our ideas about what bodies are, about where their boundaries and interconnections might lie, and about the variety of forces that act on them.

Paris, BnF, fr. 216

The *Livre*'s efforts to afford access to other modes of existence are best understood within the idiom of translation, which here takes on visual, material, political, and ontological dimensions alongside linguistic ones. Images play a key role, as the leaps across hiatuses between beings, already made in the ontological argument of *De proprietatibus rerum*, are refigured in individual codices of the French translation through the addition of illustrations. The diversity of visual programs in *Livre* manuscripts shows how its ontological claims shifted as it moved across networks of scribes and artists. Some manuscripts of the *Livre* concentrate their images in one section—focusing on animals, birds, lands, illnesses, stones, plants, the zodiac, the months, or the senses—thereby making each copy of the encyclopedia into a different ontology by drawing readers' attention to diverse nonhuman actors that join the human within its cosmology.

In Paris, BnF fr. 216 (made in Paris in the fourteenth or fifteenth century), the visual program has two main roles. First, it makes the structure, and thus the ontology, of the book visible—images are placed at start of each book, showing its focus by illustrating a particular element (fire, air, water, earth). Second, they manifest the didactic view of the encyclopedia, through a focus on images featuring a teacher and a student and the use of grids and circles. Those grids and circles embody the manuscript's attempts to underscore order, to make nature subject to human cognitive mastery, and to protect humans against an ontology that might knock them from their pedestal. The images in this manuscript thus resist some of the effects of the *Livre*'s ontology: they use human referential knowledge as a screen against the discomforts to which translation might expose humans.

The image introducing the whole book (see Fig. 1) is divided into four: at the top left, God creates the heavens using a pair of compasses to achieve perfect circles, before making the air and sea (at the top right), and then the earth (on the bottom left); on the bottom right, Charles V commissions the *Livre*. The representation of God with compasses is a stock

image, found in manuscripts of the *Bible moralisée*, where this iconography argues that only God encompasses the entire created order, rebutting heresies, especially Catharism (Tachau). God's use of a tool renders him part of the material world. However, the image of God as artisan in the *Livre* makes manifest an Aristotelian ontology that portrays God as immanent instrumental cause. As Sue Holbrook argues of a similar scheme in a *Livre* manuscript in London, British Library MS Additional 11612, the images relate Genesis (where God creates the heavens and earth) to natural philosophy (where he also creates the elements). Crucially, in BnF 216, the three images are surrounded by banderoles that read: "J'ay fait le ciel et la lumiere / Pour estre a homme chamberiere" ("I made the heavens and the light, to act as a chambermaid to man"); "J'ay fait le feu l'air et la mer / Pour homme me doit bien amer" ("I made the air and the sea, and for this man should love me"); "J'ay fait la terre bien garnie / Pour donner a home sa vie" ("I made the land well provisioned, to give life to man"; qtd. in Byrne 104). These glosses emphasize the order and hierarchy of creation, as well as underscore the fundamental role of the elements. Finally, the bottom right image makes an analogy with earthly political sovereignty in the form of Charles V. The image in this fourth quadrant looks very much like a presentation scene, but the banderole suggests a different reading: "Du livre des proprietiez / En cler francois vous translatez" ("You will translate the *Livre des propriétés* into clear French"). Charles V is speaking, as he hands the book to Corbechon. The king thus takes the place of God, who speaks in the first three images; as a result, this fourth image embodies the claims of Corbechon's prologue, which situates the *Livre* within the context of Charles's reign, enumerates the importance of learning to other great leaders of history, and praises Charles for compiling his library and commissioning the translation recorded in this book. If creation, as depicted here, emphasizes provisions for mankind, then Charles, too, is a provider. Bartholomaeus as author is "painted out" of the scene (Kemp 68), as though Charles were commissioning a completely new work, authored

by Corbechon (Byrne). This composition reorients the authority in the text, making Corbechon the tributary of royal power. In Latour's terms, these figures are beings of fiction [FIC] that guarantee the validity and security of the referential knowledge [REF] within the book.

The images can be read in a chronological sequence, but an inverse movement—from the book to the heavens—suggests that the translation provides access to an improved understanding of the created universe. God uses words and compasses to conjure the universe; in the first three images, however, he creates circles that both frame his creation of heavens and earth and provide vehicles for his words. God is depicted as a figure connecting beings as he creates them, since these circles provide visual signatures that reveal long chains of resemblance that bind a wide diversity of registers, thereby extending the idea of perfection and order to all levels of being. On a textual level, the use of couplets in these banderoles links God's different acts of creation to Corbechon's translation, which is thereby cast as a recreation of, and a mode of access to, God's work.

If writing is infused with ontological contentions, then the images also realize a potential inherent in the text. The circles, round and complete, represent ideal thought phenomena that would achieve coherency and fullness, and they work as part of an aesthetics of knowledge that seeks unity beyond all apparent multiplicity. In Book I, God is said to be immaterial, contained in no one place; a round figure, his center is everywhere and circumference nowhere. Book VIII later extends this line of thought when it asserts that the round figure symbolizes perfection:

Le monde doncques selon ce que dit Mercien est une universite de choses causees ensemble en maniere d'une espere et d'une figure ronde. Le monde a figure ronde aussi comme un cercle et aucune autre figure ne lui est si propre come la reonde si comme dit Mercien car la figure reonde est signe de perfection et signiffie la perpetuite du monde avec celui qui l'a fait lequel n'a commencement ne fin ne plus que une espere ou une ronde figure. (fol. 156v)

The world, then, according to Martianus, is a universe of things caused together in the manner of a sphere or of a round figure. The world has a round figure just like a circle and no other figure befits it like the round one, as Martianus says, because the round figure is a sign of perfection and signifies the perpetuity of the world along with that of its creator, who has no beginning or end, no more than a sphere or a round figure does.

Circles (and spheres, which the text seems to treat as the same) consequently form a central component of the ontological argument, suggesting that creation is ordered and all things are interrelated. The sensible, sublunary world consists of concentric circles of the four elements (Book VIII), whereas the rational soul, too, resembles a round figure that contains the other parts of the soul, the vegetable and the sensible (Book III). Circles thus appear at all levels of the text's ontology; they are the tools of translation, linking modes of existence and standing as examples of the way human knowledge denies gaps and creates illusions of continuity.

By focusing the reader's attention on ontologies and hierarchies, circles play an important role in the *Livre's* visual grammar, rendering legible the ontology already present in the Latin original. Stable, eternal, identical, and constant, these circles smooth over contradictions, giving the impression of complete and homogeneous knowledge. With these ideas in mind, we can return to the image of God with compasses. Of course, God did not need a tool to create the universe, but the image translates into human terms the perfection he achieved by using the circle as symbol. God is imagined in a human mode of existence, using a human implement, as divine truth here becomes a visible miracle. As Latour says, all modes of knowledge can create beauty by crossing with fiction; thus, we can admire the perfection of a scientific theorem or the justness of a judge's decision (*Inquiry* 250). God's use of an instrument constitutes a fiction that allows the communication of truths. The viewer is transported to a different level of being, grasping the divine mode of existence at least in part through geometry and the visual arts.

The images, then, achieve a complex act of translation that transcends mere simplification. In other *Livre* manuscripts, sets of concentric circles depict the ranks of angels

and the four elements (for example, London, British Library MS Royal 15 E II & III), representing the various levels and relationships that make up the ontological argument. Similarly, BnF fr. 216 has an image of the three hierarchies of angels in curved banks (fol. 23v) and two astrolabe images: one portrays an astronomer with a spherical astrolabe (fol. 132); and in the other, the sun and moon (depicted as circles) appear surrounded by stars, all visible at once, above a curved border that separates the skies from a space below, where a figure with an astrolabe points the celestial bodies out to another who gazes upwards (fol. 151; see Fig. 2). This iconography implies that circular tools allow us to perceive the circularity of the heavens and facilitate the demonstration of that truth to others, affording them a view of the ordered universe that is normally invisible. In turn, this imagery suggests that the *Livre* itself can provide its readers with such ontological insights. On fol. 164, a teacher points at a circle surrounded by four human heads blowing air; inside the circle, land appears along with buildings. Such heads were a standard way of depicting winds (Ross), whereas the circle allows a special insight into the organization of the world and the perception of the otherwise unperceivable.

These images go far beyond visualizing the text of the encyclopedia. They also use visual models of analogy, leaping across the hiatuses between beings by giving them the same shape, thus continuing the ontological claims of the text. God conjured circles in creating the world, and so the teacher on fol. 164 conjures a circle to depict the air. Different mental, conceptual, or abstract constructs and immaterial entities are illuminated in similar ways. The circular images encapsulate the combination of ready-made correspondences in the *Livre*—obvious connections between beings and elements, such as fish and water—with intellectual enhancements that abstract and synthesize, as in present-day visual scientific taxonomies (Lynch). Invisible phenomena become legible through analogies connecting the unfamiliar to the familiar.

Just like circles, grids are a tool for the visual production of scientific reality. The twelfth book, on air, opens with an image of four birds within a grid (fol. 171); and on fol. 289 (see Fig. 3), nine animals are depicted within another such structure. There is a crowned panther, surrounded by a lion, a bear, a boar, a stag, a horse, a unicorn, a camel, and a ram. This image might be seen as a representation of the created world, but a more promising path to understanding it opens up through Latour's mode of referential knowledge [REF] and "chains of reference," a term and phrase that together describe the steps by which a soil sample leads to conclusions in a publication, or the processes of imaging and imagination that allow a cosmologist to picture distant galaxies (which would of course have parallels with the astrolabe images described above). Latour's most developed example is the relationship between the mountain and the map that describes it (see Miranda Griffin's essay in this volume). Latour cautions us that any explanation in terms of the sign and the thing—or *le mot* and *la chose*—would be insufficient (*Inquiry* 79). These two concepts are just links in a much longer chain. We tend to discount the ways in which the mountain fails to resemble the map, yet the map extracts from the terrain only specific traits. It does not represent the mountain directly, but rather results from a chain of quantifying, analyzing, and transforming work, disavowed in the final product.

The visual program in this manuscript of the *Livre* also troubles the binary of *mot* and *chose*, since the world and the book do not stand in a simple relationship of representation. Rather, the world is reshaped through the selective portrayal of its traits, such as analysis and systematization. Grids are symbolic apparatuses of referential knowledge, resulting from a process of reducing reality, choosing aspects of it to make it fit into a system. Nine beasts stand for the entire ontological category "animal," and the diverse backgrounds of each depiction both hint at and control the diversity of creatures. There is no discernible order to the animals, and the image therefore appears to be systematic only for the sake of

systematicity, adopting a form that suggests order without in fact establishing a taxonomy. Whereas the visualization of Modern information fetishizes complexity in and of itself (Lima), these images suggest that complexity can be ordered through its arrangement onto levels, branches, or structures. The iconography in BnF fr. 216 thus underscores human intellectual mastery and exceptionalism, going against the *Livre*'s ontology in the text that suggests humans are made of the same substances as every other being. This manuscript therefore represents a retreat into the comfort of human epistemologies, with [FIC] and [REF] working to ward off the specter of human nonexceptionalism.

Another significant feature of the iconography in BnF fr. 216 is the presence of teaching figures, which function as beings of fiction that humanize scientific knowledge. There are four classroom scenes in which a teacher at a lectern reads to students (fols. 43, 104, 228v, 322v). In the first, medical jars are visible on a shelf above the teacher. As appropriate to the manuscript's focus on intellectual mastery, these are the "tools of the trade," the instruments of understanding and perception, just like the astrolabes. Other teaching scenes take place out in the world. Thus, on fol. 184, at the opening of the book on water, a figure points to a river, while his companion touches him kindly on the shoulder. Finally, there are teaching scenes involving an abstract space, which is neither clearly in a room nor outside. On fol. 151, with its demonstration of the sun, moon, and stars, the teacher sits on a bench, and the patterned background is slightly pulled away at the top, revealing the heavens (see Fig. 2). On fol. 164, on the other hand, the teacher is pointing at the circle depicting air, and no student appears. Whereas the depiction of water in this manuscript is integrated into a landscape, here the teacher encourages consideration of an abstract image.

Such images direct the reading of the other images in the codex, highlighting their functioning as representations of ontological categories more than as representations of things and encapsulating the expression of encyclopedic knowledge through an implicit pedagogic

dialogue. In the *Livre*, the universe is reshaped through fictional structures such as imaginary teachers and students to make it available to the understanding of the reader, while it is also fitted into the familiar structures of ordered knowledge, including grids and circles. These images stage the experience of apprehending truth for us, performing their own reception. The teachers and students do not appear in all images, but return at regular intervals, helping to shape scientific truths and providing a human epistemological anchor as we take an ontological tour through different modes of existence, from classroom abstractions to real world phenomena. This manuscript stresses the importance of referential and fictional knowledge in human life, making such knowledge the guarantor of the special status of humans with the universe.

Paris, BnF, fr. 135 and 136

If BnF fr. 216 suggested human mastery over ontology through referential knowledge (grids, circles, and teaching scenes), the two-volume version of the *Livre* spread across BnF fr. 135 and 136 (made in Le Mans, 1445–50) focuses on the vulnerability of human bodies. The ontology of the *Livre* is thus taken in a different direction, stressing the fact that humans are made of the same matter as every other being, rather than reassuring them of their authority and mastery. There are depictions of frightening, untamable elements and climatic phenomena, as well as of flora and fauna in bewildering diversity. Such images are less epistemological, and more affective, showing bodies' inescapable connections to each other and their exposure to the elements and to decay, pain and suffering.

The opening image involves the presentation of the book (BnF 135, fol. 29), but in a single image, rather than as part of a four-stage illustration making the *Livre* and God's acts of creation analogous. Medicine, illustrated by a classroom in BnF 216, is here illustrated by an image of a very sick patient with a pained expression, visited by a doctor (BnF 135, fol.

223). Whereas BnF 216 featured teachers and students throughout, here humans appear as naked bodies representing, first, the relationship between the soul and the body (BnF 135, fol. 65) and, second, the structures of human anatomy (BnF 135, fol. 113). As Jamie Kemp argues, “the images in this manuscript present human bodies as the *subject* of examination,” which “helps to destabilize the reader’s position as a detached observer” (125, emphasis original). The image that opens Book XIX focuses on sensation, with the figure portrayed as engulfed in the experience of colors, tastes, and smells (BnF 136, fol. 176v), whereas BnF 216 had musical and measuring instruments in the equivalent image, linking perception to mastery (fol. 338). Other images suggest the chaotic abundance of nature, including those with flocks of birds (BnF 136, fol. 12) and an array of animals (BnF 136, fol. 135), neither of which feature ordered grids. A series of thirty-eight individual pictures of birds and insects further develops the sense of the diversity within those particular categories of being (BnF 136, fols. 14–26). Other images suggesting that man is less privileged in the ontology as rendered here include depictions of extreme weather (BnF 136, fol. 4v), of the diversity of terrestrial landscapes (BnF 136, fols. 36v and 46v), of fire seemingly engulfing a city (BnF 136, fol. 1), and of uncut precious stones (BnF 136, fol. 73), which most manuscripts show being sold or examined. Overall, then, BnF 135/6 depicts matter and phenomena beyond the mastery of humans.

The opening image to Book VIII, which depicts the zodiac and the elements (BnF 135, fol. 285), follows this pattern and is worth considering in detail (see Fig. 4). The book contends that the sensible world is a circle of the four elements assembled in a sphere; accordingly, the image depicts a sphere divided into four quadrants, each colored and patterned differently to represent a different element. The shading makes the elements appear to move and act dynamically. The sphere depicted does not appear to be the earth, but rather an abstraction: earth the element rather than earth the planet. This depiction revises the

tradition in *Livre* manuscripts that generally represents the elements as concentric circles, which suggest static order, with the earth cocooned by the sea and sky, and with fire beyond that. Here instead, the zodiac is another circle, beyond the elements. In Book VIII, the twelve signs are said to be twelve equidistant spaces, divided into thirty degrees, with sixty minutes in each degree; and there are three signs for each element. In fol. 285, the signs do not appear to be grouped by the elements precisely, with only rough correspondences suggested. Book VIII tells us that the signs are named after animals because they have properties analogous to them. The image here stresses not order but subordination of the sensible world to inaccessible and mysterious forces and influences beyond even the highest element, fire. There is no special place reserved for humans, or even for the earth, in this celestial vision, which can be understood as a Latourian act, aiming to offer a less anthropocentric ontology.

Man's subordinate place in the universe is also underscored by an image depicting the action of the elements on the body (see Fig. 5). This rectangular composition is roughly divided into four parts, representing air, earth, water, and fire, each part distinguished by contrasting color and texture. The central human figure is "somewhat androgynous . . . male but nevertheless neutral and sexless . . . splayed across the format with one limb in each of the partitions" (Kemp 132). The image poses an ontological question: What is a body? It depicts two possible answers: a bounded self, but also a self whose boundaries are broken, with the elements both invading and spilling over it. Thus, the body has both extensive boundaries (the outside surfaces of objects) and intensive boundaries (critical points at which quantitative change becomes qualitative—for example, zones of low pressure or great heat). The body's intensive boundaries are insecure, amounting to mere differences in the concentration of elements. The image depicts four color quadrants, which intersect over the body while also continuing beyond it. Fire, water, and air seem to engulf the figure's limbs. Through its insistence on the intensity of properties, the *Livre* shows what a human body

shares with the rest of the cosmos, from the heavens down to the simplest stone. The rubric underscores the fact that human bodies consist of the same stuff as others:

Cy commence le IIIIe livre des qualitez des elemens et des quatre humeurs desquelles sont composez les corps tant des hommes comme des bestes. (BnF 135, fol. 91)

Here begins the fourth book, on the four elemental qualities and the four humors, which all bodies are composed of, whether human or animal.

BnF 135/6 thus brings the *Livre* close to depicting a Latourian flat ontology, where all actors are on the same hierarchical level and humans have no specific privilege. The image schematizes, summarizes, and even embodies this ontology through a very different use of a being of fiction [FIC] than that deployed in BnF 216. Matter is continuous and without void. It does not stop or break up at the boundaries of human bodies, as the image shows by depicting the elements inside and outside the body at the same time.

Whereas the text/image relationship in BnF 216 promoted learning and referential knowledge as a route to mastery over nature and matter, the ontology visualized in this manuscript valorizes the passive or receptive aspects of human existence. In the *Livre*, humans are tied to other beings, and BnF 135/6 powerfully brings this view out, making human readers acutely aware of their physical interdependencies with other beings by stressing their elemental composition. The *Livre* might remain anthropocentric in some respects, but the text and images together insist that there are beings above the human, and that humans share matter with lower beings. This model does not empower humans, whose complex bodies leave them exposed and vulnerable to the elements. Although the translation of the *Livre* from Latin represented an assertion of political sovereignty, human sovereignty is far from absolute. Whereas BnF 216 attenuates this perspective by reassuring humankind that the use of epistemological instruments can lead to mastery, BnF 135/6 situates humans as just another creature in a vast universe, enmeshed in a network with countless other actants.

In the *Inquiry*, Latour opposes modernizing to ecologizing in order to challenge the assumption that Modernity represents progress. However much he finds the categories of Aristotelian ontologies stifling, they were undoubtedly empowering for medieval thinkers such as Bartholomaeus and Corbechon. We need to take the stakes of such ontologies seriously, which entails seeing them in terms of their explanatory powers, following the connections they create between forms and bodies, and questioning our ideas about what the basic building blocks of reality might be. Latour's concepts can provide a methodology for grasping the ontological work that such premodern texts can perform, by recognizing their fundamentally different ideas about what exists. As I have shown, the *Livre's* main function is ontological rather than epistemological: it argues that we can understand all of creation more fully if we accept the four elements as the key constituents of all material beings. Accepting that argument then forces us to ask questions about bodies and boundaries, and about the forces and beings that can affect them. Latour's modes thus offer a powerful way of articulating the epistemological system of the *Livre* and its use of beings of fiction and structures of referential knowledge, allowing the reader to recognize how the individual manuscript renderings of the *Livre's* ontologies could swing between the anthropocentric (BnF 216) and the ecological (BnF 135/6). The modes [FIC] and [REF] are deployed as a barrier against, or a road to, human perception of an elemental ontology.

Latour argues that we are witnessing the end of the "modernist parenthesis," of the period when nature was imagined as fixed, unchanging, inarticulate, and subjected to man's objective, rational mastery, separated off from the arbitrary, subjective realm of society, language, and culture (*Inquiry* 8). The "Moderns" were (and arguably remain) those who distinguish between science and culture, thereby retroactively constructing a past where myth and reason, or belief and certainty, commingled. Though Latour takes more interest in contemporary problematization of such thought, his approach has great potential for the other

side of the parenthesis, the premodern. Latour calls for a “richer ecosystem” of values in a comparative anthropology that would protect the diversity of truths and allow for the questioning of Modernity (*Inquiry* 11). A return to premodern ontologies like that of the *Livre* might play a vital role in that process.

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