

Working Papers in Philosophy:
Registers of Philosophy

Szerkesztők: Kovács Gábor
Paár Tamás

2019/2

Reasoning by Images

Metaphors in the Opening Chapters of Émilie du Châteles's Foundations of Physics

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About the author

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Abstract

Émilie du Châtelet applies an interesting demonstrative technique in the metaphysical chapters of her *Foundations of Physics*. Metaphorical examples complete the rational demonstration, which intends to synthesize or reconcile different theses. Metaphors are most often used in a complementary way to illustrate truths that have been averred or to represent the epistemological background of scientific activity. In my paper, I intend to analyze the presence and interrelations of these images. Firstly, I will consider criticism about Du Châtelet's philosophical status and style. Secondly, I propose a close reading of the preface in order to analyze the network of images. Finally, I intend to focus on analogical or figurative explanations related to sufficient reason and hypothesis in chapters I, II and IV.

Eszter Kovács: *Reasoning by Images: Metaphors in the Opening Chapters of Émilie du Châtelet's Foundations of Physics*¹

Introduction

Although the *Foundations of Physics* (1740) was largely used by the encyclopedists (even if this use was rarely admitted) and several 18th-century scientific compilations borrowed from it, posterity has been partly unjust towards its author after her untimely death in 1749. Renewed scholarly interest in her works in the 21st century once again has drawn attention to her philosophy. It has been stated several times that there were no new theorems in her scientific works. Nevertheless, she is still considered a key mediator of Newtonian physics and Leibnizian metaphysics in 18th-century France. Her style has been praised for its clarity and elegance, but it has also been qualified naïve, too explicative, *docte* (meaning pedantic) and of poor scientific quality, particularly by Gaston Bachelard in *The Formation of the Scientific Mind* (1938).

However, Émilie du Châtelet applies an interesting demonstrative technique in the metaphysical chapters of her *Foundations of Physics*. Metaphorical examples complete the rational demonstration, which intends to synthesize or to reconcile different views. Metaphors are most often used as elements of a complementary discourse to illustrate truths that have been averred or to exemplify what I would call a personal scientific itinerary. Therefore, we may find, I will argue, a metaphorical metadiscourse in the preface and the opening chapters of Du Châtelet's book. In my paper, I intend to analyze the presence and the interrelations of these images. Firstly, I will consider criticism about Du Châtelet's philosophical status and style. Secondly, I propose a close reading of the Preface in order to analyze the network of images. Finally, I intend to focus on analogical or figurative explanations related to sufficient reason and hypothesis in chapters I, II and IV.

This analysis may seem unusual as the early modern era is sometimes considered hostile to metaphors in philosophy. Authorities most often referred to are Hobbes and Locke. Mark Johnson even speaks about the “empiricist attack on metaphor” as, for these philosophers metaphors may undermine reasoning and literal truth. Figurative discourse thus becomes “an alternative form of expression, utilized merely for rhetorical purposes or stylistic embellishment” and have to be avoided in texts that pretend to instruct, especially “where

¹ This paper was presented at the conference “Registers of Philosophy IV.,” May 26, 2018, Budapest, organized by the Institute of Philosophy of the Hungarian Academy of Sciences.

truth and knowledge are concerned”.² Although Mark Johnson’s categorization of certain 17th-century British philosophers as “anti-metaphorists” – as well as his general stand that classical empiricism looked down on metaphorical discourse in philosophical texts³ – has been refuted by more recent research it is still precarious to praise Du Châtelet’s extensive use of metaphors. However, it is legitimate to observe the function of images in her writings and to distinguish between common metaphorical expressions and original metaphors.

Du Châtelet’s philosophical status and style

Émilie du Châtelet considered herself as a mediator between science and philosophy and posterity has inherited her self-characterization. Nevertheless, several present-day scholars claim the originality of her thought, which lies in a deliberate attempt to reunite different philosophies, namely a Cartesian background, Newtonian natural philosophy and Leibnizian metaphysics (the second of which was modern for French scientists in the 1730s and the third of which was little known in France at that time). The reconciliation between clearly opposed views is realized *via* a careful reading of ancient and early modern philosophers and a thoughtful incorporation of their ideas in a single reasoning. Counter to Voltaire, ironic or satiric writing does not characterize Du Châtelet’s approach.⁴

The integration of contrary ideas or antithetical conceptions in her works may seem at first to be a curious and unoriginal amalgam. Specialists still claim the necessity to reevaluate her thought. Even if Du Châtelet’s attempt to syncretize may give us the impression of a mixture of philosophical and scientific readings and thus accounts for criticism against her works, this synthetic approach can be appreciated. Marcy Lascano for instance claims that the metaphysical chapters of Du Châtelet’s *Foundations* are not a ‘mere retelling’ of Leibnizian views: the synthesis of Lockean and Leibnizian arguments in the chapter “Of the existence of

² Mark Johnson: “Introduction: Metaphor in the Philosophical Tradition”, in *Philosophical Perspectives on Metaphor*, Minneapolis: University of Minnesota Press, 1981, 11-13. Johnson cites as a major proof Book III, chapter 10 of Locke’s *Essay Concerning Human Understanding*.

³ Nicolas T. Oosthuizen Mouton: “Metaphor, Empiricism and Truth: A Fresh Look at Seventeenth-Century Theories of Figurative Language”, in Armin Burkhardt – Brigitte Nerlich (eds.), *Tropical Truth(s). The Epistemology of Metaphors and Other Tropes*, De Gruyter, 2010, 23-49.

⁴ *Examens de la Bible*, in which she confronts scientific discoveries and orthodox interpretations of the Scripture, can be regarded as an exception.

God”, using the latter to counterpart some weakness of the first, can be considered rather unique.⁵

Evaluations of Émilie Du Châtelet’s style have been transferred from generation to generation: the idea that she writes in a clear and elegant way seems to originate from La Mettrie.⁶ All the same, as Erica Harth states, Du Châtelet’s philosophical activity quickly met with reactions “that ranged from incomprehension to thinly veiled mockery”.⁷ She was considered by some the “pedantic Lady Newton” (an expression reiterated by Ira O. Wade). One could hardly discover the exact source of this nasty designation but we can find it in the *London Quaterly Review* in 1849, in an anonymous article on Popular Science, which presents at some point a general mockery of M^{me} du Châtelet and M^{me} de Staël. The author of the article, in a general criticism of blue-stockings, wishes that “philosophical women were more feminine and less profound”.⁸ We find another interesting remark in a 19th-century collection of anecdotes: “The Marchionness du Châtelet who translated and annotated Newton’s *Principia*, was one of these pedantic ladies who studied science that it might minister to vanity”.⁹

Her scholarly rehabilitation started already in the 20th century. However, Gaston Bachelard’s severe criticism of Du Châtelet’s philosophy is a noteworthy counter-example. Bachelard accepts that truth can be found through rectifying error (which is exactly Du Châtelet’s program in the *Foundations*); still, he is very critical about her as a mathematician. For Bachelard, Émilie du Châtelet is a “pre-scientific mind” who associates with ease general views and insignificant details, mixing different registers.¹⁰ According to Véronique Le Ru, Bachelard’s negative opinion is all the more astonishing as he had certainly often used M^{me} du Châtelet’s works.¹¹ Other critics attribute this remark (and similar statements) to Bachelard’s arrogance for past authors he considered pseudo-scientific.¹²

⁵ Marcy P. Lascano: “Émilie Du Châtelet on the Existence and Nature of God: An Examination of Her Arguments in Light of Their Sources”, *British Journal for the History of Philosophy* 2011/4, 741-758.

⁶ La Mettrie: “Lettre Critique de M. de La Mettrie à Madame La Marquise Du Châtelet (*sic*)”, in: *Histoire Naturelle de l’âme*, London, 1747, 1–12.

⁷ Erica Harth: *Cartesian Women: Versions and Subversions of Rational Discourse in the Old Regime*, Ithaca: Cornell University Press, 1992, 198.

⁸ “Popular Science”, *London Quaterly Review*, 1849, 181, sec. 168.

⁹ John Timbs: “Anecdotes of a Horrid Blue-Stocking”, in *A Century of Anecdote from 1760-1860*, London: Richard Bentley, 1864, 52.

¹⁰ Gaston Bachelard: *La Formation de l’esprit scientifique*, Paris: Vrin, 1938, 12, 34, 256.

¹¹ Véronique Le Ru: “Gabrielle-Émilie de Breteuil, marquise du Châtelet, une grande dame savante”, in: Proceedings of the *Colloque international Émilie du Châtelet* (forthcoming).

¹² Jean-Luc Gautero: “Bachelard, la rupture en permanence”, 2015, <https://philosciences.com/Pss/philosophie-et-science/methode-scientifique-paradigme-scientifique/23-bachelard-rupture-en-permanence>

In the 1940s the well-known Princeton Voltaire scholar, Ira O. Wade contributed to the recognition of Du Châtelet's intellectual role in the French Enlightenment. He proved by careful examination of manuscripts that she had had a greater part in Voltaire's works from 1735 than thought before. Wade states that she was an inveterate reader and had a precise but elegant style. He also draws attention to the richness of the *Foundations of Physics*:

Looked at superficially, the *Institutions de physique* seems a perfectly harmless textbook of seventeenth-century science; looked at a bit more carefully, it seems to mark the merging of Newtonian physics with Leibnizian metaphysics; examined with greater precaution still, it appears to summarize the whole movement in science and philosophy during the seventeenth century [...] even to the point of giving some priority to Gassendi as the rediscoverer of the Greek atomists.¹³

Past decades have seen attempts to appraise Émilie du Châtelet's thought and style independently of Voltaire studies. According to Julie Candler Hayes, M^{me} du Châtelet presents herself as a "cartographer" of physics and she aims at "charting the borderlands between physics and metaphysics". Candler Hayes points at Du Châtelet's continuous „textual activity" in the *Foundations* despite „a program of authorial self-effacement" and draws our attention to the intensive use of abstraction as a metaphorical process in Du Châtelet's writing, proven by the reiterated use of reflexive verbal expressions meaning to picture, possible to use in French, like *se figurer, se représenter, se former une idée*.¹⁴

Historian of sciences Robert Locqueneux speaks of Du Châtelet's "eclectic physics" and her metaphysical search for founding it. Sarah Hutton, for her part, considers the *Foundations* a "hybrid text".¹⁵ More recently, Michel Toulmonde highlighted the presence of images in Du Châtelet's scientific manuscripts, some of which seem even poetic:

Newton's new philosophy will revive our soul and make us finally dispose of mankind's most beautiful tribute. This man who measured Saturn in one of his hands and a light beam in the other.¹⁶

¹³ Ira O. Wade: *Intellectual Development of Voltaire*, Princeton: Princeton University Press, 1969, 291.

¹⁴ Julie Candler Hayes: "Physics and Figuration in Du Châtelet's *Institutions de Physique*" in: *Reading the French Enlightenment: System and Subversion*, Cambridge: Cambridge University Press, 1999, 87, 94.

¹⁵ Sarah Hutton: "Between Newton and Leibniz: Émilie Du Châtelet and Samuel Clarke" in Ruth Hagengruber (ed.), *Émilie Du Châtelet between Leibniz and Newton*, Dordrecht: Springer, 2011, 86.

¹⁶ "la nouvelle philosophie de Newton va donner un nouvel être à ~~notre~~ nos âmes, et ns faire jouir enfin du plus beau partage de l'humanité, cet homme qui a pesé saturne d'une main, et une rayon de lumière de l'autre" Manuscripts found in 2010, notebook 72388, photo 170. With the permission of the Centre international d'étude du XVIII^e siècle, the transcripts are mine. See also Michel Toulmonde: "Des manuscrits scientifiques nouveaux d'Émilie du Châtelet" in *Proceedings of the Colloque international Émilie du Châtelet* (Paris, 2017), forthcoming.

However, use of metaphors is an ancient tradition in philosophical writing. Hans Blumenberg mentions Du Châtelet at least once in his book *Shipwreck with Spectator* even though he does not consider her scientific writings but her *Discourse on Happiness*. Blumenberg draws our attention to the pair of metaphors “harbor of deliberation” and opportunity to win happiness by “going to sea” at the beginning of Du Châtelet’s essay.¹⁷ But are these metaphors original? Several classical metaphors occur in the *Foundations of physics*, for instance, we imagine time as a flow but we can also imagine time as a sequence.¹⁸ Widely used metaphorical adjectives often appear in her reasoning too, e.g.: “That an infinity of dim representations accompany our clearest ideas is something we cannot deny, if we pay a little attention to ourselves.”¹⁹ We can even find overused metaphors (commonplaces) in Du Châtelet’s work: for example, existence is a chain and we may speak about the course of actions.²⁰ However, in what follows, I am going to focus on more complex images.

Foundations of Physics, Preface

The preface (*Avant-propos*), where metaphors are particularly frequent, is essential for our analysis. Émilie du Châtelet adopts a less formal style here, as she dedicates the work to her thirteen-year old son: in fact, it is conceived as a textbook for young people interested in natural philosophy. The study of physics and of its metaphysical background is presented as a noble task. The preface details this approach: the author speaks about scientific Enlightenment, its predecessors, national impartiality and the ideal of search for the truth. Du Châtelet forewarns her son not to neglect studies before devoting his life to his military career. An important part of the preface is a discourse about the tribute of sciences, illustrated by metaphors which represent scientific progress, as well as man as an agent and observer of this historical phenomenon.

Natural philosophy, namely physics are “True Sciences” that one has to study at “the dawn of [his] reason”.²¹ Sciences are often personified, even if they are based on abstract

¹⁷ Hans Blumenberg: *Shipwreck with Spectator. Paradigm of a Metaphor for Existence*, trans. Steven Rendall, Massachusetts: Massachusetts Institute of Technology, 1979, 34–35.

¹⁸ Émilie Du Châtelet: *Foundations of Physics in Selected Philosophical and Scientific Writings*, trans. Isabelle Bour and Judith P. Zinsser, Chicago: The University of Chicago Press, 2009, 155, 158.

¹⁹ *Ibid.*, 171.

²⁰ *Ibid.*, 139, 141.

²¹ *Ibid.*, 116.

cognition: algebra is an “admirable art [...] which separating things from images, eludes the senses [*se dérobe aux sens*], and speaks only to the understanding”.²² Algebra is also the “language” of the mind but geometry is “the key to all discoveries”.²³ Du Châtelet considers the historical change: in her opinion pre-Cartesian (Scholastic) philosophy and science were a kind of secret and philosophers initiated in it were conspirators using an unintelligible language. Cartesian philosophy is represented by the classical metaphor of light. Although she refers here to a well-known idea – the Cartesian turn, which had actually become an intellectual commonplace by this time – the image seems quite original: Scholastic philosophy and science are coded messages and have to be decrypted or rejected.

Up to the last century, the sciences were an impenetrable secret, to which only the so-called learned [*les prétendus Savants*] were initiated; it was a kind of cabal, the cipher of which consisted of barbarous words that seemed to have been invented to confuse the mind [*obscurcir l'esprit*] and to discourage it.²⁴

Some of the metaphors in the preface are borrowed from predecessors. Du Châtelet remarks for instance: “We rise to the knowledge of the truth, like those giants who climbed up to the skies by standing on the shoulders of one another.”²⁵ In fact, it is a modified version of the well-known image *nanos gigantum humeris insidentes*, attributed to Bernard de Chartres and traced back to the 12th century. Newton writes in a letter to Robert Hooke:

But, in the meantime, you defer too much to my ability in searching into this subject. What Descartes did was a good step. You have added much several ways, and especially in taking the colors of thin plates into philosophical consideration. If I have seen further it is by standing on the shoulders of Giants.²⁶

The change between the first person singular (Newton) and the first person plural (we) is worth taking a look at: it suggests that Du Châtelet, in spite of her apparent modesty, considers herself a member of the scientific community.

Similes follow one another closely in the preface in order to create an analogical chain.

²² Ibid., 116.

²³ Ibid., 117.

²⁴ Ibid., 118.

²⁵ Ibid., 118.

²⁶ *The Correspondance of Isaac Newton*, ed. by H. W. Turnbull, vol. I, Cambridge University Press for the Royal Society, 1959, p. 416.

We are still in physics, like this man blind from birth whose sight Cheselden restored. At first this man saw nothing but a blur; it was only by feeling his way and at the end of a considerable time that he began to see well. This time has not quite come for us. [...] But he who refused to learn because of this limitation would resemble a lame person who, having a fever, would not take the remedies which can cure it, because these remedies would not stop him from limping.²⁷

Metaphors are used to explain methods and their utility:

One of the mistakes of some philosophers of our time is to want to banish hypotheses from physics; they are as necessary as the scaffolding in a house being built; it is true that, when the building is completed, the scaffolding becomes useless, but it could not have been erected without it.²⁸

We can also find an interesting critical metaphor about systems in the text:

Most great men who have made systems provide us with examples of this failing [of knowledge because of human pride]. These are great ships carried by the currents; they make the most beautiful manoeuvres in the world, but the current carries them away.²⁹

Experiments are almost as necessary in natural sciences as hypotheses, for the observer's blindness is inevitable: "In all your studies, remember, my son, that experiment is the cane that nature gave to us blind ones, to guide us in our research; with its help we will make good progress, but, if we cease to use it, we cannot help falling."³⁰ Failing, falling, being blind, seeing blur, getting lost or going astray are without exception metaphorical verbal expressions for erroneous knowledge, recurrent in the preface. In fact, these expressions often serve as advice.

Science is represented as a human construction based on facts and discoveries. Du Châtelet defines her own role in the following chain of metaphors:

Physics is an immense building that surpasses the powers of a single man. Some lay a stone there, while others build whole wings, but all must work on the solid foundations that have been laid for this edifice in the last century, by means of geometry and observations; still others survey the plan of the building, and I, among them.³¹

²⁷ Du Châtelet: *Foundations*, 120.

²⁸ *Ibid.*, 121.

²⁹ *Ibid.*, 121.

³⁰ *Ibid.*, 121.

³¹ *Ibid.*, 122-123.

Metaphysics is related to this metaphor: two elements, namely construction and sight, form the image. This time elevation (and not depth) is the characteristic of metaphysics, even though it is also represented as the foundation in other passages, which makes the whole image somewhat confused: “Several truths of physics, metaphysics and geometry are obviously interconnected. Metaphysics is the summit of the edifice; this summit is so elevated that our image of it often is a little blurred.”³²

It is significant that Voltaire also uses the building metaphor in the second version of the *Elements of Newton's philosophy* (1741), in a critical remark about Leibnizian metaphysics, probably as a counter-argument to his companion's enthusiasm: he qualifies it a bold edifice the foundations of which can hardly be seen (“*on bâtit cet édifice hardi sur des fondements qu'on n'aperçoit guère*”). Véronique Le Ru found a passage in the *Elements* where Voltaire seems to speak to Émilie du Châtelet in a slightly ironical way about the “soul is the mirror of the Universe” image:

I am compelled to present with clarity the famous Leibniz's hypothesis, which is of more merit for me since it has become the object of your research.³³

However, the merit that Voltaire seems to allow to the marquise and not to Leibniz is conditional and he is not at all convinced about the soundness of this metaphysics. He represents both Leibniz's ideas and the conception that Émilie du Châtelet tries to found on it as uncertain and unaverred principles. The image “metaphysics is the summit of the edifice” can be a reply to Voltaire's objection but it might as well be a reverse of Descartes's representation of metaphysics as the root of the tree in the Preface of *The Principles of Philosophy* (1644).

Metaphors related to sufficient reason and hypothesis

As the notions of reason and thesis are abstract, it seems difficult to picture them. All the same, we can find figurative expressions concerning these notions in Du Châtelet's work. In

³² Ibid., 124.

³³ “Je suis obligé d'exposer avec clarté cette hypothèse du fameux Leibniz, devenue pour moi plus respectable depuis que vous en avez fait l'objet de vos recherches.” See Véronique Le Ru, “Quand Voltaire et la marquise parlent métaphysique” in: *Émilie Du Châtelet. Éclairages et Documents Nouveaux*, Ferney Voltaire: CIEDS, 2008, 215.

the chapter “Of the principles of our knowledge”, she borrows or more precisely resumes Leibniz’s method: exclusion through contradiction is a basic step for finding truth and sufficient reason is the first principle to explain all kinds of phenomena. Metaphors used in this demonstration include “quicksand”, “dream” and “fable”. According to Du Châtelet’s interpretation, sufficient reason can make coherent and intelligible apparently incoherent phenomena and guide us in finding a teleological order in the universe. Thus, this process is assimilated to navigation in a mixed metaphor: “with the principle of sufficient reason, he [Leibniz] has provided a compass capable of leading us in the moving sands [quicksand] of this science [metaphysics]”.³⁴ Incertitude and incoherence might be apparent and therefore mankind should not abandon the hope of a better understanding: “We lack a system of calculation for metaphysics similar to that which has been found for mathematics [*pour la Géométrie*], by means of which, with the aid of certain *givens* [*données*], one arrives at knowledge of *unknowns* [*inconnues*].”³⁵ Émilie du Châtelet considers the principle of sufficient reason as a *given* that must be taken into consideration while trying to explain actual phenomena. Even though metaphysics may seem dim and elusive, sufficient reason assures unity and consistence. Hence refusing this principle is illusory:

What sometimes happens in dreaming gives us the idea of a fabulous world, where all events could happen without sufficient reason. [...] Thus, those who deny the principle of sufficient reason are the inhabitants of a fabulous world that does not exist.³⁶

All the same, living in such a world is often tempting. Émilie du Châtelet speaks here again to her son. This time sufficient reason is represented by the mythological labyrinth and thread image but the labyrinth is only a false mental formation. Imagination seems untamable but the consequent use of sufficient reason can control it.

It must be acknowledged that one could not have rendered the sciences a greater service [as Leibniz did], for the source of the majority of false reasoning is forgetting sufficient reason; and you will soon see that this principle is the only thread that could guide us in these labyrinths of error the human mind has built for itself in order to have the pleasure of going astray.

So we should accept nothing that violates this fundamental axiom; it keeps a tight rein on the imagination, which often falls into error as soon as it is not restrained by the rules of strict reasoning.³⁷

³⁴ *Foundations*, 123.

³⁵ *Foundations*, 123.

³⁶ *Foundations*, 129-130.

Regardless of whether we can or cannot accuse Émilie du Châtelet of unconditional enthusiasm for Leibniz's philosophy, her text did have influence on French thought in the 1750s and 1760s. The article "Suffisante raison" of the *Encyclopédie* is entirely borrowed from Du Châtelet's text and the images that are meant to represent the need for this principle are reused as well. The article is anonymous but we know that several of the borrowings from the *Foundations of Physics* come from Samuel Formey.³⁸

The reflection on hypotheses, which are unaverred statements, is not less interesting for our subject. Hypotheses are represented on the one hand by the classic "wrong path/right path" metaphor, on the other hand, as monsters. Chapter IV, "Of hypotheses", refers to Newton. We read in the *General Scholium*:

But hitherto I have not been able to discover the cause of those properties of gravity from phænomena, and I frame no hypotheses. For whatever is not deduced from the phænomena, is to be called an hypothesis; and hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy.³⁹

Du Châtelet counters the famous Newtonian program *Hypotheses non fingo* (overvalued by Newtonians and post-Newtonians) and claims the utility of hypotheses. The major metaphorical approach here is typical: wandering is inevitable while searching for the truth. In French, the etymology is even clearer: the verb "errer", the noun "errance" and the noun "erreur" share the same stem. Hypotheses are part of an itinerary where rectification is necessary and whenever a contradiction appears, scientists have to find a new path. One has to ambulate while trying to understand the surrounding world and avoid certain pitfalls: it is a trial and error procedure. The route may lead to possible, plausible or certain causes of phenomena. The person who wanders directs posterity: "some must run the risk of losing their way in order to mark the good path for others"⁴⁰ – we read.⁴¹

³⁷ Du Châtelet: *Foundations*, 130-131.

³⁸ Koffi Maglo: "Mme Du Châtelet, l'*Encyclopédie* et la philosophie des sciences", in: Ulla Kölving and Olivier Courcelle (eds.), *Émilie Du Châtelet: Éclairages et Documents Nouveaux*, Ferney-Voltaire: CIEDS, 2008, 255-266.

³⁹ Isaac Newton, "General Scholium", in *Philosophiæ Naturalis Principia Mathematica*, trans. Andrew Motte, 1729, <https://newtonprojectca.files.wordpress.com/2013/06/newton-general-scholium-1729-english-text-by-motte-a4.pdf>

⁴⁰ Du Châtelet: *Foundations*, 147.

⁴¹ This approach is qualified by Véronique Le Ru as "le droit d'errer en sciences", that is "the right to err/to get lost in science".

Du Châtelet also remarks that following Newton's statement Newtonians generally regarded hypotheses as "the poison of reason and the plague of Philosophy".⁴² This passage also appears in the article "Hypothèse" of the *Encyclopédie* (1765), some paragraphs of which are borrowed almost word for word from Du Châtelet's *Foundations of Physics*.

A false hypothesis is a misleading route; a correct hypothesis is the right way. These metaphors seem indeed rather trivial but we find a more original one in Du Châtelet's thought: false hypotheses confirmed can become "monsters" that scientists have to battle on their way:

If those who wanted to explain so many surprising effects by means of hooked, branchlike, and serrated particles had paid attention to what is required to make a truly philosophical hypothesis, they would not have slowed, as they did, the progress of the sciences by creating monsters that subsequently had to be fought against as realities."⁴³

We can find a similar remark in one of Du Châtelet's manuscript notebooks, in which scientific errors are represented as phantoms:

At each step we make towards truth we are surrounded by the perils of error, these are monsters which close our way, they are constantly reborn, and one only can avoid them due to equality, strong defiance and careful exactitude in one's research.⁴⁴

But how a simple error can become a monster? For Du Châtelet a false hypothesis is not a real distortion but a false statement that has been accepted and solidified certainly is. In fact, she speaks about false authorities. Therefore, a hypothesis can be factually erroneous but, as a scientific method, its use is acceptable. A hypothesis is a possible or even plausible explanation for phenomena that should not be confounded with a true proposition. Errors are monsters insofar as we perpetuate them.

Conclusion

⁴² Du Châtelet: *Foundations*, 148.

⁴³ *Ibid.*, 154. The remark is presumably directed against Nicolas Lemery.

⁴⁴ "à chaque pas que l'on fait vers la vérité on est entouré des pièges de l'erreur, ce sont des monstres qui s'opposent à notre passage et qui renaissent sans cesse et qu'on ne peut éviter que par une grande égalité une extrême défiance, et une grande exactitude dans ses recherches" Notebook n° 72325, photo 44.

Although strings of metaphors in Du Châtelet's writings are uncontestably interesting, we have to further investigate their philosophical value. Images serve to structure and order knowledge and to illustrate it. Nevertheless, these images can seem naïve, as they seem to represent the author's own cognition: she images her reasoning as the elements of new knowledge. As a matter of fact, this process should be considered modest and unsophisticated rather than pedantic or pretentious. We can distinguish more or less clearly an argumentative thread (or layer) in her textbook and a figurative discourse, the second being less structured than the first.

Can posterity's negative statements about Du Châtelet's works come from certain contempt for metaphorical language (as opposed to conceptual language) in philosophy? Would the use of metaphors, evoking literary expression, indeed be "pre-philosophical" and non-systematic? Would it seem to be an original design but not original thought? In my opinion, these questions can only be answered by a careful examination of the use of metaphors in philosophical texts of Du Châtelet's male contemporaries.

