Du Châtelet on Causal Powers: Extension, Forces, and the Metaphysical Ground of Bodily Interaction

Introduction

The central question this paper examines is how du Châtelet accounts for the possibility of genuinely causally efficacious bodies in the *Institutions de Physique*. If bodies lack intrinsic powers, physical interactions become unintelligible, and events in nature would either depend on divine intervention or collapse into mere phenomenal regularities. To address this problem, du Châtelet examines the two major accounts she inherits from Descartes and Leibniz. She argues through the Principle of Contradiction (PoC) and the Principle of Sufficient Reason (PSR) that, although each account contains an important insight, neither can explain the cause of physical interaction on its own. Neither Descartes nor Leibniz takes it to be a requirement of metaphysical explanation that physical interaction be rendered intelligible through powers located in bodies themselves. Consequently, neither account locates real causal powers in bodies themselves. Descartes' purely passive bodies cannot originate action, while Leibniz's monads, as the only true agents, reduce bodily causation to appearance. Du Châtelet, by contrast, insists that intelligibility in physical interaction requires real causal powers to be located in bodies themselves, and it is against this requirement that she re-evaluates both accounts while preserving insights from each.

By preserving the Cartesian commitment to extension, retaining the Leibnizian insight that bodies require internal sources of activity, and adding the further principle of passive force, du Châtelet departs from both accounts and develops a metaphysical account in which extended bodies possess both active and passive powers. This makes it possible for natural philosophy to

identify genuine physical causes and provides the metaphysical foundation necessary for it to function as a truly explanatory discipline.

The paper first examines Descartes' and Leibniz's accounts of body and causation as they are taken up by du Châtelet, then explains her critique of both positions. It then develops her theory of causally efficacious bodies and concludes by showing how her account grounds natural philosophy in metaphysical principles.

I. Descartes' account: Bodies as Passive Extension

Descartes holds that the essence of body consists entirely in extension, as du Châtelet summarizes in §137. To be a body is therefore simply to have length, width, and depth. Properties such as shape, divisibility, and impenetrability depend on extension and add nothing essential. Since extension contains no internal source of activity, bodies are purely passive. They may be moved or affected by external factors, but nothing in their nature allows them to originate motion. Du Châtelet notes that Descartes and his followers "removed all activity from creatures" (§138).

Given this passivity, Descartes explains the source of motion by appealing to God. Since bodies cannot act, any appearance of physical causation cannot originate in them. As du Châtelet reports his view, "it is God himself who immediately moves a Body on the occasion of another," and creatures "can receive, but they can never act, nor produce" (§138). What seem to be interactions between bodies such as collisions, resistances, or transfers of motion are therefore occasions on which God determines the resulting motion in accordance with the laws He has established.

Within this structure, natural philosophy studies the motions that God arranges and maintains. The laws of nature describe how divine will orders matter, while bodies contribute no intrinsic force of their own.

II. Leibniz's account: Monads and Phenomenal Bodies

Leibniz begins from the Principle of Sufficient Reason. As du Châtelet explains, he rejects the Cartesian view that the essence of matter lies in extension because this leaves the existence of extension unexplained. "The sufficient reason for an extended and composed being can only be found in simple beings without extension" (§120). Anything extended is divisible and therefore composite, and "the same question will be asked about these small extended particles as about extension itself," hence explaining composite beings in terms of extended simples amounts to "saying nothing" (§120). To satisfy the PSR, one must ultimately arrive at beings that are unextended, without parts, and simple.

These simple beings are Leibniz's monads. Du Châtelet describes them as not possessing all properties tied to extension: "They have no shape… have no height and fill no space, and have no internal motion" (§123). Because they lack spatial extension and parts, monads cannot be divided or engage in causal interaction through physical contact, since contact presupposes spatial relations such as shape, position, and divisibility. The distinctive feature of monads, instead, is that each contains its own internal principle of action.

Du Châtelet presents Leibniz as introducing this internal activity in order to avoid the Cartesian consequence that all motion would depend immediately on God. If extended bodies were wholly passive, every physical event would be explained by divine volition alone. Such an account, she argues, fails to satisfy the PSR, since God's will by itself cannot explain why one determinate

motion occurs rather than another (§126). Leibniz therefore locates genuine activity in simple substances rather than in extended bodies.

However, since monads are non-extended, they cannot themselves interact. What appears as interaction among bodies is instead explained by God's pre-established harmony: God has arranged the world such that the internal states of monads correspond systematically to the motions of bodies. On du Châtelet's analysis, although this harmony is grounded in the inner activity of monads and thus avoids appeal to arbitrary divine volition, bodily interactions remain merely phenomenal, since the causal ground of motion is located entirely outside extended bodies themselves. When a monad has a tendency, the associated body behaves as if influenced by it, but only because God has coordinated the two. On this account, monads are the true sources of activity, while bodies express their states only in appearance.

III. Why Neither Account Makes Physical Interaction Intelligible

Du Châtelet's examination of the Cartesian and Leibnizian conceptions reveals that, although both systems can account for the fact that bodies appear to exercise forces, neither can explain how bodies in fact possess causal powers of their own, as empirical experience requires (§138). Descartes identifies bodies with purely passive extension, while Leibniz locates all real activity in simple, non-extended monads. Each view captures an important insight, yet each removes causal power from bodies. On her analysis, they fail to provide an account of physical interaction that is non-contradictory, supported by sufficient reason, and consistent with experience, since neither Descartes nor Leibniz locates real causal powers in bodies themselves. However, this failure does not indicate an internal inconsistency in either system, but reflects du Châtelet's insistence on a stronger explanatory requirement than either Descartes or Leibniz adopts.

Du Châtelet's critique of Descartes begins with the PoC. If bodies are defined as nothing but passive extension, they contain no internal source of activity. According to Descartes' definition, matter "can never become active by any possible modification," making it "a solely passive substance" (§138). Yet "experience proves that Bodies act and are endowed with an activity" (§138). A conception that defines bodies as entirely passive while experience shows them to be active yields a contradiction between concept and phenomenon, thereby violating the PoC.

Her second objection concerns Descartes' appeal to God as the immediate cause of all physical effects. Since bodies lack intrinsic force, Descartes treats them not as causes but as "occasions" (§138) upon which God acts. Under this view, bodies never produce motion, they simply provide the occasions on which God produces the effect. Du Châtelet does not deny that God is "the source of the actuality" (§121), but she argues that making divine will the immediate cause of each event leaves natural philosophy unable to explain why one motion occurs rather than another. Since God's volition offers no determinate reason grounded in the nature of bodies, this account fails to satisfy the PSR.

A parallel difficulty arises in Leibniz's system. Leibniz improves on Descartes by recognizing the need for internal principles of activity, without which all motion would depend immediately on God, a result violating the PSR. Yet he locates this internal activity not in bodies but in simple, non-extended monads. Since monads "have no shape… have no height and fill no space" (§123), they cannot touch, resist, or collide, and therefore cannot stand in the spatial relations required for physical interaction. As a result, extended bodies themselves possess no causal power. Their apparent interactions arise only because God has coordinated the states of monads through pre-established harmony, ensuring that bodies behave as if they exert forces on one another. This again makes the explanation of bodily motions depend on divine arrangement

rather than on properties of bodies, failing the PSR and conflicting with experience, which "proves that Bodies act and are endowed with an activity" (§138).

Taken together, these criticisms reveal a common difficulty. Descartes removes all activity from bodies by defining them as passive extension, while Leibniz removes bodily causation by placing all real activity in non-extended monads coordinated by God. In both systems, bodily interactions ultimately remain at the level of appearance rather than arising from real powers in bodies. For du Châtelet, an adequate account must retain Leibniz's insight that natural effects require internal principles of action, but must locate these principles in extended beings themselves which are capable of entering into the spatial relations that physical interaction depends. This motivates her own account of bodies as possessing extension, active force, and passive force.

IV. Du Châtelet's Account of Causally Efficacious Bodies

Du Châtelet develops her own account by identifying the principles required for an intelligible theory of physical interaction. Her central claim is that the essence of body cannot consist in any single property. Instead, bodies require three irreducible, self-independent, and jointly necessary principles: extension, active force, and passive force, each contributing a distinct explanatory role. These principles correspond to three dimensions that metaphysics of nature must supply: the possibility of a body, the possibility of change within that body, and the actualization of one determinate change rather than another. By assigning each of these roles to a different principle, du Châtelet provides a metaphysical structure in which bodies become genuinely causally efficacious extended beings.

Du Châtelet begins by preserving the Cartesian insight that extension is essential to body. Extension determines a body's size, shape, position, and divisibility, and thereby specifies the range of changes that are possible for it. As she writes, "all the changes that happen in Bodies can be explained by these three principles, extension, resisting force, and active force," in part because extension gives every body "a size, a shape, and a situation" (§145). What extension offers, however, is only a form of possibilities: it tells us what a body can be and what transformations are compatible with its spatial configuration. Extension alone cannot explain why any change takes place, much less why one particular change occurs rather than another. Because extension contains no internal differences except geometric arrangement, it cannot ground variation or activity, as §139 emphasizes: if the essence of body consisted solely in extension, "[m]atter is homogeneous," and the PSR forbids us from admitting a world in which nothing accounts for differences that experience clearly reveals. Thus, extension must be supplemented by further principles.

To explain why a change can happen, du Châtelet turns to the Leibnizian idea of an internal principle of action. Unlike Leibniz, du Châtelet does not restrict real activity to simple, non-extended beings. While she agrees that simple beings provide the ultimate metaphysical ground for force (§126), she insists that extended bodies themselves possess active force as part of their own essence (§139). In this way she avoids Leibniz's view that bodily forces are merely phenomenal expressions of monadic activity. Every body, she argues, contains an "internal force, or force tending toward motion" (§139), without which no determinate difference could arise among the parts of matter. Active force is therefore necessary in order "to have an accurate idea of the essence of Body" (§139). It is the metaphysical source of a body's tendency toward motion, the principle that makes change possible rather than merely conceivable. In this

structure, active force corresponds to the second layer in the metaphysics of nature: once the possibilities determined by extension are fixed, active force explains why a body is capable of transitioning from one possible state to another. Without this principle, all bodies would remain at perfect rest, and physical interaction would be indistinguishable from divine fiat.

Yet the existence of possible changes does not suffice to explain why one particular change becomes actual. For this, du Châtelet introduces passive force, or resistance: the principle that determines how a body receives an impressed change. In §142, she insists that "passive force was necessary so that the movement was carried out with sufficient reason." Without resistance, no proportionality between cause and effect could exist, and motions would occur arbitrarily, violating the PSR, since nothing would constrain how an impressed force is translated into a determinate effect. For example, if two bodies of unequal weight are subjected to the same impressed force under identical conditions, their resulting motions must differ in a determinate way. Passive force, or resistance, is what accounts for this proportional difference; without it, the same force could produce indistinguishable effects in bodies with different constitutions, leaving no sufficient reason why one outcome rather than another occurs. Passive force, or inertia, is thus what confers determinacy on physical events. It ensures that the actual change a body undergoes corresponds quantitatively to the forces acting upon it and to its own internal constitution.

Taken together, the three principles form a unified metaphysical structure. Extension gives the form of possible changes, active force explains why transitions between these states can occur, and passive force determines which transition, among all possible ones, becomes actual in accordance with sufficient reason. As du Châtelet later summarizes, "by the active power we see why an action can happen, and by the force why it becomes actual" (§161).

Through this triadic account, du Châtelet secures the causal efficacy of bodies without reducing them either to mere extension or to purely internal principles detached from spatial interaction. Bodies are extended, internally active, and resistant, capable of producing and undergoing real changes intelligibly governed by the PSR. In this way, her metaphysics provides the foundation that natural philosophy requires in order to identify genuine physical causes and to render the phenomena of motion explicable.

V. The Relation Between Metaphysics and Natural Philosophy

For du Châtelet, the theory of extension, active force, and passive force is the conceptual groundwork that natural philosophy requires in order to function as an explanatory discipline. Natural philosophy describes how bodies behave under various conditions, but such descriptions presuppose prior answers to more fundamental questions: what a body is, what powers it possesses, and why its interactions unfold with determinate necessity rather than as mere regularities of observation. As she emphasizes in §145 and §161, the possibility, the power, and the actuality of change correspond respectively to extension, active force, and passive force: principles that cannot themselves be discovered through experiment, for experiment already presupposes them. Metaphysics therefore precedes natural philosophy in the order of explanation.

Du Châtelet also uses these principles to clarify the relation between the phenomenal and the real. Extension and passive force describe how bodies appear to us and how they behave within experience, but they do not by themselves provide the metaphysical ground of causal efficacy. Active force, by contrast, supplies the genuine, non-phenomenal principle that explains why the laws governing bodies hold and why their motions are more than orderly appearances. Natural philosophy thus studies both the phenomenal structure of bodies and the metaphysical grounds

that render this structure intelligible. Without this deeper layer, the laws of motion would describe mere phenomena rather than genuine causal interactions.

In this respect, du Châtelet's view remains compelling even from a contemporary standpoint. Empirical science can identify patterns, formulates laws, and predicts outcomes, but it does not by itself explain why its laws hold, why bodies have the powers these laws presuppose, or why mathematical descriptions correspond so reliably to the structure of the natural world. These questions arise prior to empirical inquiry, and they cannot be answered by further measurement. They concern the conditions under which scientific explanation is possible at all. Under this view, metaphysics does not stand apart from natural philosophy but provides the conceptual grounding that allows physical laws to be understood as explanations rather than as mere descriptions of phenomena. By clarifying the nature and powers of bodies, metaphysics secures the intelligibility and legitimacy of natural philosophy's causal claims.

Conclusion

Du Châtelet's synthesis of Cartesian extension and Leibnizian internal activity resolves a problem that neither system can address on its own. By locating genuine causal powers within extended bodies through the coordinated roles of extension, active force, and passive force, she provides the metaphysical structure required for intelligible physical interaction. In uniting the phenomenal order described by natural philosophy with its underlying metaphysical grounds, her account transforms physical explanation from a record of appearances or divine arrangements into a science of real causes.

Citation

Du Châtelet, Émilie. *Institutions de Physique*. Paris, 1740.