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OVERCOMING ONESELF, THE WORLD AND OTHERS

EFFORT AS THE AGONISTIC FACE OF AGENCY

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by

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Résumé

L'effort est une expérience et un concept de tous les jours. Tout le monde fait des efforts, tout le monde parle des efforts qu'il ou elle fait. En dépit de cette quotidienneté, la nature exacte de l'effort demeure obscure. Le but de ce travail est de parvenir à une définition claire et distincte des efforts afin de mieux comprendre cette réalité, quotidienne quoiqu'élusive, et permettre ainsi d'ordonner et d'unifier les différents aspects de la recherche scientifique à ce sujet. Pour ce faire, je m'appuis sur une méthode aristotélicienne. Celle-ci nous invite à répondre à trois questions successives. La première concerne le *genus* de l'effort : de quelle genre de chose s'agit-il, dans quelle catégorie faut-il ranger l'effort ? La deuxième concerne le *differentia* de l'effort : quelle est la différence spécifique de l'effort, par contraste d'avec les autres membres de sa catégorie ? La troisième est une question d'espèce : y a-t-il différentes espèces d'effort ? Je défends respectivement les trois thèses suivantes : premièrement, l'effort appartient à la catégorie des actes que nous faisons (et non des sensations que nous éprouvons, quoique nous pouvons éprouver nos efforts) – ce que j'appelle l'*agentivisme* à propos du genre de l'effort ; deuxièmement, la différence spécifique des efforts par contraste d'avec les actions qui n'en sont pas est d'être une action *agonistique* : une action de lutte dont le but spécifique est de surmonter une résistance ; troisièmement, il y a deux espèces d'efforts qui sont l'effort corporel et l'effort conatif (ou effort « de volonté »). L'effort corporel est l'exercice de la puissance de son corps dans le but de surmonter la résistance mécanique d'une force newtonienne opposée. L'effort conatif est l'exercice de la puissance de l'esprit dans le but de surmonter la résistance motivationnelle d'un désir contraire.

Mots-clés : effort, efforts, action, agentivité, résistance, lutte, corps et esprit, recherche scientifique.

Abstract

Effort is both an ordinary experience and concept. Everybody makes efforts; everybody speaks about efforts. In spite of this familiarity, the nature of effort remains unclear. The goal of this dissertation is to shed light on this ordinary but elusive reality by forging a clear and distinct definition of efforts, in order to organize and unify the many dimensions of scientific research involved with the notion. I shall do so with the help of an Aristotelian methodological guideline. This guideline raises three intricated questions. The first one is a *genus* question: what is the genus of effort? To which category do efforts belong? The second one is a *differentia* question: what is the specific difference of efforts, in contrast to the other members of the same category? The third question is a *species* question: are there different species of effort? I defend the following three claims: first, efforts belong to the category of actions – this I what I call *agentivism* about effort's genus; second, efforts differ from other actions in virtue of the fact that an effort is an *agonistic* action: a "competitive" action whose specific end is to overcome some resistance; third, there are two species of efforts, which are bodily effort and conative effort (or effort "of will"). A bodily effort is the exercise of one's bodily power in order to overcome the mechanical resistance of some opposite Newtonian force. A conative effort is the exercise of some mental capacity in order to overcome the motivational resistance of some contrary desire. After an introduction setting the methodology, the dissertation is divided into four parts.

(I) The first part defends the idea that efforts belong to the category of actions. *(1)* The first chapter identifies two views of effort's genus, namely experientialism (efforts are sensations) and agentivism (efforts are actions), and defends agentivism. *(2)* The second chapter clarifies the nature of agency by defining the notions of the agent, and the object, of an action; and by distinguishing basic, teleological and intentional actions.

(II) The second part investigates into the usual conceptions of effort and serves as a state of art. *(3)* The third chapter considers theories that do not sharply distinguish actions and efforts, *(4)* the fourth chapter reviews theories of physical effort; *(5)* the fifth chapter reviews theories of mental effort. *(6)* The fourth chapter identifies four antinomies structuring our general understanding of effort: first, all actions are effortful, and some actions only are effortful; second, all efforts are felt, and some efforts only are felt; third, there are species of effort, and there aren't species of effort; four, effort is an action, and effort is the property of an action. The last two parts gradually solve these four puzzles.

(III) The third part introduces the agonistic account of effort, whose core premise is that resistance is the differentia of effort – the criterion of the distinction between actions that are, and actions that aren't, efforts. *(7)* The seventh chapter explains the difference between the substantial and formal parts of the proposal: the substantial view is that there are two species of effort (bodily and conative effort),

and the formal view is that both are subsumed under the same formal definition, which also integrates other potential species of effort. *(8)* The eight chapter focuses on bodily effort. A bodily effort is an attempt to overcome some mechanical resistance (opposite Newtonian forces) through the exercise of the agent's bodily power (its muscular, respiratory and cardiovascular capacities). Bodily efforts are everywhere and not necessarily felt. *(9)* The ninth chapter focuses on conative effort. A conative effort is an attempt to overcome some motivational resistance (a contrary desire). It is, for the agent, to try to perform an action that she intrinsically desires not to perform because of its unpleasantness for her. A conative effort, or effort of will, is a 2nd-order mental action that aims at overcoming an intrinsic desire not to perform an unpleasant 1st-order action. Conative efforts are more restricted than bodily efforts, and they are also necessarily felt to some extent.

(IV) The distinction between bodily and conative effort makes sense of the ordinary notion of effort and solves two puzzles. On the one hand, conative effort is essentially felt, but bodily effort isn't. On the other hand, all physical actions are effortful in a bodily sense, but not every action is conatively effortful. The fact that conative efforts are sui-generis 2nd-order mental actions also suggests that efforts should be conceived as actions rather than properties of actions, regarding the ontological debate about the individuation of actions. *(10)* But the distinction between bodily and conative effort also raises two worries. The first worry is that the distinction has destroyed the kind "effort". The second worry is that even if bodily and conative efforts were two species belonging to the same kind, they wouldn't be sufficient to account for all efforts. The tenth chapter voices these worries and suggests that we need a formal definition to solve them. *(11)* Therefore, during the eleventh chapter, I introduce the formal agonistic definition of effort. It has two benefits. On the one hand, it subsumes bodily and conative effort under the same concept, hereby justifying that there are two species of the same kind and preserving the unity of the kind "effort". On the other hand, the agonistic definition isn't exhausted by bodily and conative effort because it is compatible with other claims regarding what resistances there are. It hereby opens the ontological discussion of what other species of effort there could be, such as collective efforts. *(12)* The twelfth chapter replies to the objections that resistance is neither specific nor necessary to effort. *(13)* An extensive conclusion wraps everything up.

Keywords: effort, efforts, agency, actions, resistance, struggle, mind, body, scientific research.

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Introduction: Goal and Methodology

Introduction. The goal of this dissertation is to understand the notion of effort from a philosophical perspective by forging an adequate definition. This introduction clarifies the nature of that goal as well as the nature of the method and sets a first challenge. It is a notoriously difficult philosophical task to assess what philosophy is, what it does and what it should do. For the present work, the practice of philosophy will be characterized as an attempt to grasp the adequate definition of effort. But what is an adequate definition? (A) To begin with, I introduce the Aristotelean definition of definition, which I adopt as a methodological guideline. To define an explanandum is to identify its genus, then its differentia. (B) I then consider what a true definition is. A definition is true if it commits neither error of inclusion nor error of exclusion. It is through an analytical as well as a phenomenological analysis that we will know whether a definition commits such errors or not. On that occasion, I shall mention the main resources or "database" that we will be using to evaluate whether a definition of effort is true or not, or at least plausible or implausible. (C) Then, I present the specific difficulties attached to the definition of effort in particular. Trouble comes from the scatteredness and implicitness of most definitions of effort. Indeed, most definitions are stated in an implicit format, and they are distributed among various disciplines with distinct vocabularies.

(A) The Aristotelean Definition of Definitions

I will endorse Aristotle's long-established definition of "definition". According to Aristotle, there are two essential steps that constitute the activity of defining: identifying the genus of the explanandum, and then its specific difference. The Stagirite recipe reads as follow: to define a kind *x*, one must do two things: identify the genus *G* of the kind *x*, then identify the specific difference of that kind, which is the specific way for *x* to be a *G*. While the first step is informative and necessary, it is not sufficient, for only the second step brings a complete and fully determined definition.[1]

For instance, the genus of human beings is "animal": "Human being" belongs to the category "animal".[2] Connecting human beings to their genus informs us about some of the essential properties that human beings share with other animals, such as the capacity to regenerate themselves as

[1] According to Aristotle, we can only define kinds but not particulars.
[2] I use "genus" and "category" synonymously.

individuals through nutrition, and as a species through generation. But it is not sufficient to define human beings by reference to their genus since not all animals are human beings. A genus-based definition would be too broad because it would not be sufficiently informative. One should, therefore, discover the specifically human way of being animal. According to Aristotle, that specific way is rationality: humans are those animals whose way of being animals is to live rationally. Rationality is the specific difference between human beings and other members of the animal category (Aristotle, 2009).[3]

I should say that I endorse the Aristotelian framework as a methodological and formal tool, but not necessarily as a substantive view of what a definition must be. Aristotle considered that definitions are eternal and anchored to the real properties of the thing defined. But if Aristotle was an essentialist about definitions, the present work is also compatible with various forms of constructivism and non-essentialism. That is, whether definitions of effort are eternal and immutable, as Aristotle would have argued, or whether they are forged and changed by human practices and discourses, we can still identify and capture core proposals and disagreements about the nature of effort. Whether these proposals are eternal and objective, or whether they are socially constructed, they can still be classified in an Aristotelian way based on whether they are compatible or not, moving from the most general (dis)agreements to the most specific (dis)agreements.

(B) Available Resources to Define Effort

Thus, a definition of effort must be a two-layered judgment identifying both the category of effort as well as the specific property that enables us to distinguish efforts from the other members of its category. We now know what a philosophical definition is. This is however not sufficient. We don't only want a well-formed definition; we also want a *true* definition, an *adequate* definition. But how do we move from a well-formed definition to a true definition? I shall assume that a definition is true if it avoids errors of exclusion and inclusion. A definition of effort is adequate if it includes, in extension, everything that is an effort, and only those things that are efforts. An adequate definition of effort should not include, in its extension, things that are not efforts, nor should it exclude from it things that are efforts. No genuine counterexample is to be found that proves the definition to be too broad or too narrow (Suits, 1978, pp. 40-41).

[3] For an exposition of Aristotle's definition of definition, see the Metaphysics (I, 8, 1057b 37 – 1058 a1) and the Analytics (I, 27, 43a 25-32).

But how do we assess whether a definition commits inclusive or exclusive errors? How do we evaluate the adequacy of a definition? We shall compare the extension of the definition with the list of those things that we call effort. A definition is adequate if it integrates (and only integrates) in extension things or events that we usually call efforts. Now, effort is an ordinary concept that we use a lot. Consequently, we cannot assess whether a definition can integrate in its extension everything that we say about effort. Therefore, we shall restrict our focus to some specific judgments we make on effort – namely, scientific judgments. Thus, I assume that a true definition of effort is a proposition that avoids inclusive and exclusive errors; and I assume that we can evaluate whether it avoids such error by checking whether the definition can integrate, in its extension, the properties that scientific judgments commonly attribute to effort.[4]

What "scientific judgments" (in a broad sense) can we use to assess the adequacy of our definitions? I will test the definitions of effort by comparing them with what is said about effort in philosophy, psychology and physiology. These three broad disciplines integrate different styles of "scientific approaches". First, effort has been an important concept for several *philosophical theories*. For instance, it is a central component of Hobbes' theory of voluntary movements (Hobbes, 1999) and it is at the centre of the philosophical theories of Spinoza (Spinoza, 2009), and Maine de Biran (Biran, 1995, 2001).

Secondly, effort is a key concept in various *research programs*. These programs share a methodological and organic unity, but unlike single-headed theories, they are pursued by various researchers. Effort is notably a crucial concept for the neurocognitive program on cognitive control (Bermúdez, 2021; Inzlicht et al., 2018; Musslick & Cohen, 2020; Shenhav et al., 2013, 2017; Sripada, 2021), as well as for the motivational intensity theory of motivation (Brehm & Self, 1989; Gendolla et al., 2012; Richter et al., 2016; Richter & Wright, 2014), and to some extent, for the comparator-based model of action's control and phenomenology (Frith, 2012; Lukitsch, 2020; Pacherie, 2008).

Thirdly, effort comes into sight in several *thematic discussions* which, if they lack the organic structure of specific theories or research programs, nevertheless appeal to similar putative properties of effort. Effort is mainly mentioned in works referring to a principle of least effort (Chang, 2016; Ferrero,

[4] One may find this method deceptive, on the basis that we want to know what efforts are, and not only what we say about them. It is, however, questionable whether we can know what there is, beyond what we can say about what there is. In any case, I believe that analyzing what we say about effort is our best chance to understand what they are. This dissertation, if it succeeds, captures the meaning of effort – what we think efforts are, what we believe that they are, and what it is that we think about when we speak about effort. I remain neutral on the question of whether the semantic analysis of effort is also an ontological analysis of what efforts are. If capturing the meaning of a concept is capturing the real essence of a concept, then we are trying to capture the essence of effort. If we can distinguish the semantic analysis of a concept from its ontology, (just like we can debate about God's definition whether or not there is a God), then our primary goal is to capture our concept of effort, but not to assess whether that concept is correct. That said, precisely capturing the meaning of effort will help to frame the question of effort's existence.

1894; Zhu et al., 2018; Zipf, 1949), in works on the sense of effort (de Morree et al., 2012; Forest, 2007; James, 1880; Lafargue & Franck, 2009; Marcora, 2009; Pageaux, 2016), in the discussion of the labor theory of economic value (Vaughn, 1978), the value of achievement (Bradford, 2018; Kriegstein, 2017), and about the grounds for desert (Rawls, 1971; Sadurski, 1985; Sher, 1979).

Of course, one may object that there is very little chance that one definition could integrate all the findings of all these scientific approaches in one unified account. For, one may expect, these theories are not compatible. Their findings amount to incompatible propositions about the nature effort, the objection goes. Consequently, a definition cannot integrate all these findings on pain of being contradictory. However, I believe there may be more agreement between these theories than we would expect on first sight. Still, we will have to discriminate between incompatible definitions. To do so, we will compare the plausibility of said definitions.

On the one hand, we will evaluate the plausibility of the resulting theories in regard to their consequences for our general understanding of the world: is the theory compatible with our general metaphysical frameworks? On the other hand, we will evaluate the plausibility of the theories with respect to the introspective analysis of our subjective experiences of effort: is the theory compatible with our private subjective experiences of effort? Summing up, a definition is adequate if, on the one hand, it makes sense of as many scientific findings as possible and if, on the other hand, it is analytically and phenomenologically plausible.

(C) Two General Challenges

There is a paradox about our understanding of effort. On the one hand, effort has received sustained theoretical attention, but on the other hand we lack clearly explicit definitions of effort. There are two reasons that explain this paradox. The first is the fact that most definitions of effort are left implicit by their proponents (Massin, 2017). The second is the fact that the definitions are distributed among various disciplines (Bermúdez & Massin, 2023).

Implicitness

The first reason why effort is ill-understood is precisely that it is often not defined. Our prima facie epistemic attitude is to consider effort a crystal-clear phenomenon that is not in need of any definitional inquiry. Effort, Massin remarks, is mostly used to explain other phenomena but barely ever analysed itself. It is used as an explanans, and barely ever as an explanandum (Massin, 2017, p. 233). Theories

mentioning and utilizing "effort" rely mainly on implicit presuppositions about its nature in the context of explaining something other than effort, such as motivation (Baumeister & Vohs, 2007), self-control (Holton, 2009; Sripada, 2021), economic or moral values (Sorensen, 2010; Vaughn, 1978), sensations of physical exercise (Demanet et al., 2013; Pageaux, 2016), the experience of failure and difficulty (Lukitsch, 2020; Pacherie, 2008), voluntary action and the sense of agency (Bayne & Levy, 2006; Hobbes, 1999), and so on. Relatedly, some authors who defend explicit definitions of effort have voiced the methodological necessity of explicit definitional proposals, as well as a review of the different possible positions. Massin and Bermudez's works (Bermúdez & Massin, 2023; Massin, 2017) are, however, two rare exceptions in that regard (for explicit definitions of effort, see Biran, 2001; Gendolla et al., 2012; James, 1880; Massin, 2017, 2022; Preston & Wegner, 2009; Richter et al., 2016; Steele, 2021).

Scatteredness

Not only are definitions of effort mostly implicit, but they are also spread across various disciplines, with different frameworks and vocabularies (Bermúdez & Massin, 2023). In order to know what efforts are, we need to compare the different available definitions. However, these definitions first need to be made explicit and stated in commensurable vocabularies. In that regard, we should keep in mind that the theories of effort discussed in this work are not all on the same foot. Some theories are explicit; some are implicit. A theory of effort is explicit if it is an explicit proposition that claims to capture the nature of effort. Different philosophers have defended explicit definitions of effort, and we owe much to several of them (Biran, 2001; James, 1880; Massin, 2017; Spinoza, 1677). However, they are the exception. "Implicit theories" refer to theoretical works that attribute a conceptual function to effort without clearly defining it. These works do not explicitly define effort, but they do implicitly. Their implicit view of effort can be captured by assessing the conceptual role that effort plays in their explanation of the explanandum they track.

Goal of the First Part: Defending Agentivism about Effort's Genus

The objective of the first part is to dissolve confusions about the genus of effort and to defend agentivism, the view that efforts are actions. Agentivists believe that we need to refer efforts to actions in order to understand them. Now, just like defining "human beings" by reference to their genus "animal" is necessary without being sufficient, likewise defining "efforts" by reference to the notion of action (or feeling, if you are an experientialist) is not sufficient. Although informative, no generic proposal (i.e., a

proposal about the genus of effort) can be sufficient because once we know the category of efforts, we do not yet have a fully determined definition. We must also identify proposals about the specific difference of effort by contrast to the other members of the same genus. But if the two questions are connected, they should also be clearly distinguished. For the moment, the focus is not on the differentia of effort. Let me say a few words about the differentia of effort to be sure that the two questions are clearly distinguished.

If let us say, to illustrate, efforts were sensations, what would the specificity of the sensation of effort be? For instance, would it be the sensation of mentally trying to contract one's muscles (Forest, 2007; Marcora, 2009; Pageaux, 2016), or would it rather be the sensation of controlling some problematic motivational episodes (Inzlicht et al., 2018; Westbrook & Braver, 2015)? Or would it be the sensation of muscular tension in one's body (James, 1880)? Or the sensation that something is not going as planned (Lukitsch, 2020; Pacherie, 2008)?But if efforts belong to the category of actions, which I shall argue they do, *how* do they belong to this category: are efforts identical to actions, or a property of actions? Are efforts a property of (or identical to) all actions, or a property of (or identical to) some actions only? What makes it the case that one specific action is (or has the property of being) an effort: are efforts difficult actions, costly actions, actions that the agent is averse to doing, actions she performs against some resistance, actions not going as planned? These are the questions we will not ask during the first part, but after.

One last remark. For the time being, I shall use the proposition "efforts are actions" in an undetermined manner. Efforts could be a specific type of action, an adverbial modification of action, a mode of operation, a way of acting, a property of an action; efforts may refer to all actions or to some actions only, and so on. The goal of the first part is only to motivate the claim that efforts are, in some sense or another, actions, agentive events, things we do. This is what I shall do right away in the next chapter.

I. THE GENUS OF EFFORT

Introduction. What is the category of effort? The first part defends the agentivist view of effort's category, which is the view that efforts are goal-directed actions. The sense in which efforts *are* actions will be examined during the second part.[5] For the time being, I remain neutral concerning the following two questions: first, whether efforts are identical to, or properties of, actions; second, whether they are identical to (or properties of) some or all actions. (1) In the first chapter, I detail the specificatory method that I follow. This Aristotelean-inspired method entails that we first need to identify effort's genus before identifying its specific difference with respect to the other members of the same category. (2) During the second chapter, I raise the question of effort's genus: on the one hand, efforts seem to belong to the category of intentional actions (agentivism); but on the other hand, they also seem to belong to the category of feelings (experientialism). I introduce initial definitions of action and feeling, and I propose an argument in favour of agentivism. That there is a feeling of effort doesn't mean that effort is a feeling. In fact, the feeling of effort is an agentive feeling. (3) During the third chapter, I treat the definition of action in a more systematic way. I distinguish the basic level of agency, which is better captured by the causative theory of action, from its modes. The concept of modes of action will then give us the possibility to refine the Aristotelian question about effort's differentia. The goal of the second part will be, from then on, to understand which mode of agency the concept of effort targets.

[5] In particular, I shall raise the question whether an effort is better conceived as an action or as the property of an action.

1. The Question of Effort's Genus

Introduction. The Aristotelean definitional framework gives us a useful guideline. Applying Aristotle's definitional method to effort implies that one should first identify proposals about effort's genus before identifying the different proposals about effort's specific difference. We must start by assessing the possible answers to the following question: to which category does effort belong? What sort of things are effort? As we shall see, the answer is not straightforward. A conceptual inquiry into research on effort reveals one main tension between two prima facie incompatible approaches to the genus of effort: an approach that ties effort to the category of action, and an approach that tends to tie effort to the category of sensation. In other words, it is unclear whether *making* an effort (or *acting* effortfully) is more fundamental than *feeling* an effort, or if it is the other way. I will argue that the genus of effort is action –that is, I will defend the agentivist view of effort's genus. First (1.1.), I introduce the two views of effort's genus, which are agentivism and experientialism. Second (1.2.), I introduce minimal definitions of action and sensation, but also some minimal ontological assumptions. Third (1.3.), I develop my general argument in favor of agentivism.

1.1. Agentivism and Experientialism

So, the first step is to identify the genus, or category, of effort. And the first key question about effort's nature is whether effort falls more on the agentive side than on the phenomenal side, or if it is the reverse. The tension is reflected by the resources of our ordinary English language. On the one hand, we make efforts, we act effortfully, we put in a great deal of effort. But on the other hand, we have a sense of effort, we feel effort. The French language also mentions a "sentiment" of effort. We need to decide between these two views of efforts' genus:

Agentivism: effort belongs to the category of actions

Experientialism: effort belongs to the category of sensations

1.1.1. *Making* Effort

Undoubtably, many theories conceive efforts as things that are, in some sense, done by agents. Massin (2017, p. 241) explicitly defends the idea that efforts are made by us: "We have feelings, but make efforts […] To feel is something that happens to us; to strive is something that we do". Some authors have identified efforts as an essential component of actions, if they have not just identified efforts and actions (Biran, 2001; Gendolla et al., 2012; Hobbes, 1999). Others (Sher, 1979; Sorensen, 2010; Kriegstein, 2017) seem to conceive efforts as actions because they defend the idea that efforts should ground and justify responsibility, desert, praise, and achievement. But arguably, it is only if efforts were actions over which agents had some agential control and for which they were responsible that they could receive positive value out of their exertion. All these theories seem to endorse "agentivism", which is the generic view that effort belongs to the category of actions, and consequently, that efforts are actions. Agentivism, or so I should argue throughout this first part, is the correct view of effort's genus. "Action-based views" is the label I will use to refer to theories endorsing (or at least suggesting that they endorse) agentivism.

1.1.2. *Feeling* Effort

But on the other hand, many theories seem to conceive efforts as things that, in some sense, happen to agents and that usually have a distinctive phenomenology. Many thinkers have indeed focused on the alleged sensation or feeling of effort, to the point that they seem to suggest that efforts just are sensations. For two centuries, psychologists and neuroscientists have investigated the neurophysiology of the "sense of effort", just like we can investigate the five classic senses. These scientists have wondered whether this "sense" is constituted by afferent nervous signals travelling from the muscles to the central nervous system (e.g., James, 1880), or by efferent nervous signals emitted by the brain and sent to the muscles (e.g., Marcora, 2009; 2010; Pageaux, 2016). Some researchers have also tried to investigate the role of this "sense" or "feeling" in other phenomena. For instance, it is believed to be a key feature of mental control (e.g., Shenhav et al., 2017) and of the sense of agency (Demanet et al., 2013; Lukitsch, 2020; Pacherie, 2008). Bayne and Levy (2006, p. 63) consider that our sense of agency is constituted by the more basic senses of authorship, causation, and effort; the last one referring to "the *experience* of needing to invest energy and will-power in our actions," (my emphasis). They hereby suggest that effort could just be a specific sensation.[6] Some of these theories suggest, if they don't endorse, "experientialism", which is the generic view that efforts belong to the category of sensations. I shall reject this view on the basis that it conflates the claim that there is a feeling of effort (which is a true claim) and the claim that effort is a feeling (which is a false claim). "Feeling-based views" is the label I will use to refer to theories endorsing (or seemingly endorsing[7]) experientialism.

[6] For the moment, I assume that "awareness (of effort)", "phenomenal appearance", "sense", "sensation", "experience", "perception", and "feeling" are equivalent expressions as they all suggest that effort implies (if it is not reducible to) some conscious experience with some distinctive qualitative properties.

[7] I say "seemingly" because I shall indeed argue that most feeling-based views are in fact compatible with agentivism. My point will be to show that if it is true that feeling-based views approach the phenomenon of effort through its phenomenological dimension, they nevertheless presuppose that an effort is some sort of action performed by an agent.

1.2. Agency and Phenomenology

Now, the Aristotelean methodology we follow presupposes a minimal understanding of the category to which the explanandum belongs. Identifying proposals about effort's genus requires us to agree first on some minimal categorization of (our representations of) reality. Consequently, the distinction between action-based and sensation-based views of effort's genus requires a minimal grasp of the nature of actions and sensations. This raises a challenge because those terms are the object of millennia of debates. Still, we need to capture some minimal understanding and agreement. To do so, I shall introduce a minimal contrastive view of actions and sensations. It is minimal in the sense that I shall introduce definitions of action and sensation without engaging in a full-blown defense and analysis, which I shall do later.[8] It is contrastive in the sense that the goal is primarily to understand in what respects actions and sensations differ.

(1.2.1.) First, I introduce a very minimal ontology according to which the world is made of individual substances and events involving such individuals, wherein they manifest their powers (1.2.2.) Second, I distinguish active from passive powers: an active power is a capacity to cause a change, a passive power is a capacity to be changed. In so doing, I contrast actions in general (the manifestation of an individual's power to cause changes) with passions (the manifestation of an individual's power to be changed). (1.2.3.) Third, I define sensations as a special kind of passion: for an individual to have a sensation is for it to manifest its power to be changed and to feel that change, that is, to have a conscious qualitative mental representation of it. (1.2.4.) Fourth, I define action (in the relevant sense for our discussion of effort) as the capacity to intentionally exercise an active capacity: acting is, for an individual, to cause a change in order to actualize some end.

1.2.1. Ontological Assumptions

What there is. I endorse a minimal ontology according to which there are *substances* (individuals, perduring entities), these substances having *powers* (capacities, dispositions) to modify the world or to be modified by the world, the manifestations of such modifications being called *events* (processes,

[8] I will say more about sensations during the next section of this chapter, where I will endorse a representationalist view about effort's phenomenology. It is the view that the phenomenological dimension of effort is a feeling that has an object, this object being an effort, an effort being an agentive event. I will say more about actions in the following chapter.

happenings). By the "world", I refer to the sum of individual substances and events. To begin with, actions and sensations are the manifestations of certain powers of individuals. In line with tradition and common sense, I assume that entities such as human beings and other living animals are the type of substances to which we attribute actions and sensations. I also assume that there is a difference between having a power and manifesting it.

Powers and their manifestations. Indeed, on the one hand, individuals *have* capacities, powers, or dispositions (I use these terms synonymously) which, on the other, can be but need not be *manifested* or exercised. Having a capacity is not the same as exercising it. This distinction amounts to the classic distinction between potentiality (dunamys) and actuality (energeia). While sensations and actions are "actualities"; capacities and powers are "potentialities". If actualities entail potentialities, the reverse doesn't hold. If one feels something such as pain, it entails that one has the capacity to feel something like pain. But on the other hand, having the capacity to feel pain doesn't entail that one feels pain right now. Likewise, if one speaks German, then one must have the capacity to speak German. But having the capacity to speak German doesn't imply that the owner of that capacity exercises it. Efforts, whether they are actions or sensations, are actualities. Both the agentivist and experientialist views identify effort with the manifestation of a disposition, namely events.[9]

Reality: the totality of what there is, that is, individuals and events

Individuals: perduring entities with minimal identity

Events: changes occurring (caused by, or happening to, individuals)

Powers: the dispositional capacity of an individual to cause a change or to be changed

Manifestations: the actual occurrence of an individual's power to cause a change or to be changed

[9] Some vocabulary remarks. At the most basic level, an event just is the occurrence of a change. The occurrence of a change is usually associated with the manifestations of some dispositions, that we can also call *events*. What is more, some events can compose more complex events. Some complex events can stage the manifestations of several powers by several individuals. If we consider that the battle of Waterloo is an event for instance, it is clear that it is composed by the manifestations of many powers by many individuals.

In terms of vocabulary, I also assume that powers, dispositions and capacities are equivalent in that they are potentialities (dunamys) while actions and sensations are equivalent in that they are events wherein capacities are manifested (energeia). Finally, I also enable myself to label substances as individuals.

1.2.2. Active and Passive Powers

Actions and sensations are manifestations of specific powers: they are events. Now, substances such as human beings have many (essential or contingent) powers. Key to this ready-to-use ontology is the distinction between active and passive powers, which refers to the difference between being the cause of an event and being affected as the result of an event. This distinction amounts to the distinction between *actions* and *passions.* For certain substances like human or other animals, there is a difference between events that they, in some sense, do (their actions), and events that, in some sense, happen to them (their passions). They have the capacities to be agents, but also patients. A substance manifesting a power to act (that is, the capacity to be the cause of a change), I call it an agent. A substance manifesting a power to be changed, I call it a patient.

Agent: being an agent is, for an individual, manifesting an active power

Patient: being a patient is, for an individual, manifesting a passive power

Actions are manifestations of active capacities (capacities to produce effects), sensations are manifestations of passive capacities (capacities to be modified, to be affected by the manifestation of some causal power). It can be summarized by the following Lockean distinction: while actions are manifestations of the active causal power of agents, that is, of their capacity to cause changes; sensations manifest the passive causal power of agents, that is, their capacity to be the (sentient) effect of some causal relations (Locke, 1689). I assume that there are at least two sorts of active powers, namely, mental and physical active powers. For instance, we have the physical power to move our body, but we also have the mental power to (try to) understand philosophical texts.

1.2.3. The Power to Feel

Passions and sensations. Sensations are passions, but not all passions are sensations. For instance, digestion is a passive event, a passion, something that the agent does not directly control. But it is not an event of which the agent is necessarily aware. I *may* have a sensation of digestion, like in the case of painful digestion. The specific property that is added in the case of felt digestion is an element of consciousness. We are constantly the patient of many changes, such as chemical modifications occurring as a result of the environment in which we are situated. But only some of those changes can be, and

are, the object of a sensation. I assume a representationalist view of sensations according to which feeling or sensing something is a matter of having a certain content for the patient. Being a patient is undergoing a change; having a sensation is having a conscious mental representation of that change.

Feelings and sensations. Now, there are obviously different kinds of mental representations such as beliefs, beliefs about beliefs, sensations, feelings, perceptions, bodily sensations, mental sensations, and so on and so forth. With respect to the matter of effort, two distinctions are useful. First, the phenomenology of effort seems a qualitative representation (a sensation or feeling for instance) rather than a merely doxastic representation (a belief, for instance). Second, the phenomenology of effort refers by and large, or so it seems to me, to a feeling rather than to a simple sensation. Indeed, it can be useful to distinguish sensations and feelings here. Although we can obviously disagree about the terminology, there is arguably a substantial difference at stake. The basis for this distinction is that sensations and feelings seem to entail different types of conscious experiences. A sensation, or so I'll assume, is conscious in a merely functional way (access consciousness) while a feeling is also conscious in a phenomenal, what-it-is-like way (Block, 1995).

Access and phenomenal consciousness. A mental state is consciously accessible if it can be used practically, in some sense, by the agent. This type of consciousness is illustrated by the infamous cocktail effect for instance. An individual overhears someone saying her name and hereby realizes that she has been having an auditive access to a conversion, although she wasn't directly aware of it in some other sense. On the other hand, the experience of pain (in the ordinary, intuitive sense of the term) is usually conscious in a more straightforward way. In terminological terms, I assume that this is the distinction between access consciousness (the person at the cocktail party is access-conscious of the conversation before hearing her name) and phenomenal consciousness (the person who spills boiling water on her hand is phenomenally conscious of the pain in her hand). Being access-conscious is having a mental representation that can be used as a premise for practical reasoning and agency. Behind phenomenally conscious is having a mental representation of a change, this representation having a certain distinctive quality and what-it-is-like-for-me (Kriegel, 2009; Zahavi & Kriegel, 2015). I use "sensation" to refer to mental representation of changes that are access conscious. I use "feeling" to refer to mental representation of changes that are phenomenally conscious Although feeling implies sensation, the reverse doesn't hold.

The experience of effort: sensation or feeling? With respect to the sense, sensation, sentiment or feeling of effort, one question is precisely to clarify whether it should be conceived as a sensation or as a feeling. Is the experience of effort merely a sensation that can be used as a piece of practical information if the situation requires it, or is it also a feeling with a distinctive quality of which I am phenomenally aware? It seems generally admitted that the experience of effort is identified with a

feeling, that is, with an experience entailing some sort of phenomenal consciousness. I will thus mostly refer to the *feeling* dimension of effort, rather than to the *sensation* of effort. However, one could argue that the matter is perhaps more intricate. For this reason, I nevertheless characterize experientialism as the view that efforts belong to the category of *sensations*, to the extent that the category of sensations encompasses the category of feelings.

Sensation: the access-conscious mental representation of an event

Feeling: the phenomenally conscious mental representation of an event

Access-consciousness: an event is access-conscious if it can be used as information for practical agency by the patient who experiences it

Phenomenally conscious: an event is phenomenally conscious if it has a distinctive quality for the patient who experiences it

1.2.4. The Power to Act

Actions and goal-directed actions. We have a definition of sensation –the access conscious mental representation of an event. We now need a definition of action. In a minimal sense, an action refers to an event wherein an individual substance causes a change: Brutus kills Caesar, the rabbit eats a carotte, the moon causes tides. An action just is an event that we attribute to an individual as its cause.[10] Now, if we restrict action to this minimal sense, it entails that non-living agents can make efforts. However, the meaning of "action" that agentivism about effort presupposes seems more restrictive. That is, it probably refers to goal-directed actions. We can characterize goal-directed actions as the teleological manifestations of some active capacity.[11] A goal-directed action has two crucial properties: first, it is an action in the minimal sense (the causation of a change, the manifestation of an active capacity); second, the relevant capacity is manifested in relation to a goal.

[10] This is the definition defended by the causative view of action, which I'll develop and endorse during the next chapter.

[11] In other words, I endorse a teleological version of the causative theory of action. This, again, will be the object of more detailed analyses during the next chapter.

Effectivity and teleology. Both aspects (effectivity –the causation of a change, and teleology –the relation to a goal) are essential to capture the meaning of action that is relevant for the understanding of efforts. On the one hand, if we only consider mere (non-teleological) actions, we would be taking too many actions into consideration. For instance, if I crushed someone's feet, then I made an action in the sense that I caused the crushing of that person's feet. I did cause a change, in contrast to simply be changed a result of an action, like if someone stepped on my feet instead for instance. But I didn't act in the sense of doing something for a reason, with a view to an end, teleologically. On the other hand, the teleological aspect is not sufficient either because some intentions can be realized without action, just in case the world conforms to my will by chance. To illustrate, the garden of Eden conforms to Eve and Adam's wills, but not as a result of their actions –the effectivity element is lacking. It is not as a result of the manifestation of their power that the world is like they want it to be.

Teleology. Teleological actions are goal-directed manifestations of an active capacity, that is, goal-directed causations of changes. Now, I shall also distinguish teleological from intentional actions. I keep "intention" for the representations that an agent may, but need not have, of the goals she is pursuing. Of course, it is a much-debated topic how one should understand intentionality. The distinction I make between teleology and intentionality is mostly functional, as it will become apparent near the end of this work.[12] So, a few comments are in order. First, I thus assume that an agent needs not be aware of the goal she is pursuing. Second, an agent can act intentionally without being free. The captain who intentionally commands the crew to throw the shipment into the sea, the addict who buys drugs or the nazi who participates to a genocide may, in various sense, not be free in their actions, although they act intentionally. Three, one can act intentionally and irrationally at the same time in the sense that one can perform an action that cannot cause the intended result, like in some cases of self-deception for instance.

[12] Indeed, I shall argue that efforts have a specific goal of which the agent needs not be aware –one can make efforts without knowing it. To anticipate, I shall claim that an effort aims at overcoming some resistive powers in the agent's environment. But the agent often doesn't have a representation of this goal because we generally make efforts instrumentally. For instance, an alpinist overcomes the resistive power of gravity by means of a bodily effort: she makes an effort in order to overcome the gravitational force. But she usually doesn't have that goal in mind, unless perhaps she is a physicist or a fan of Newton. Her intention, the goal she has in mind, is (say) to "reach the top". But in order to reach the top, she must make an effort, that is, she must overcome the gravitational resistance applied on her body. This description of things relies on two claims. First, there is the current claim that we can pursue goals without having a representation of it. Second, I will also lean towards a power-based ontology according to which what we really do, on many physical occasions like this, is overcoming resistive forces. The spatial change ("reaching the top") is merely a consequence of the modifications of the balance of mechanical powers at stake here ("overcoming gravity by means of a bodily effort"). This will of course be the object of further developments, but it may have been useful to mention this point from the start.

Power. Let me also clarify one important point about power. Namely, I admit that there are both mental and physical powers. Agents like us have the capacity to cause physical changes (I can contract my muscles, raise my arm, change the spatiotemporal location of my body) as well as mental changes (I can focus on one particular part of my perceptual field, I can try to retrieve a memory, I can calculate, I can seek reasons to do or not to do something, I can argue against your views, etc.). I take this distinction as a brute fact, which I will not motivate. I just assume, in other words, that there are both physical and mental active powers. This is crucial for me to say it because many confusions about the nature of effort stem from the confusion of its physical and mental species. But let's not put the kart before the horses.

Action: the manifestation of an individual's (mental or physical) capacity to cause a change

Teleological action: the manifestation of an individual's (mental or physical) capacity to cause a change in order to reach a goal

I) Conclusion

We now have definitions of the two alleged genera of effort. From these definitions, it follows that "action" will include events[13] such as the voluntary movement of one's body, active deliberation, voluntary formation of intentions and resolutions, top-down attentional focus, intentional imagining and remembering, exercises of self-control and exercises of emotion regulation. Again, to be clear, I assume that there exists both physical actions (such as voluntarily moving one's body) but also mental actions (such as intentionally focusing one's attention, exerting self-control or voluntarily trying to understand a difficult concept). A physical action implies the teleological manifestation of an active physical power (the power to voluntarily contract one's muscles, the power to cause a physical change); a mental action implies the teleological manifestation of an active mental power (the power to voluntarily perform logical operations such as inferences and deductions, the power to concentrate, the power to control oneself, etc.).

"Sensations" will include any episode with some conscious distinctive qualitative property, such as sensations and feelings of pain, pleasure, heat, cold, confidence, experiences of tickling, nausea, orgasm, anxiety, dread, burn, scratch, stretch, fear, joy, wetness, dryness, highness, drunkenness, or anguish. I place in this category both sensations, that are access conscious, and feelings, which are also

[13] I do not distinguish between events and processes (Vendler, 1957; Mourelatos, 1978; Galton, 2012).

phenomenally conscious. I also acknowledge the existence of both "basic" feelings, such as the feeling of the sun heating my face, and noetic or metacognitive feelings, which are feelings (and not merely beliefs) representing other mental states (Chambon et al., 2014; Dokic, 2012; Vazard & Audrin, 2022). For instance, feelings of confidence and knowing as well as feelings of confusion have been conceived as noetic feelings, in the sense that they carry information to the agent about herself, in an experiential format. For instance, the feeling of being confused "tells" us in an experiential way that we should probably carry on information and evidence gathering. This point is worth noting because the feeling of mental effort seems to be conceived as a noetic feeling by several bodies of research.[14]

Now of course, some feelings can occur as a result of what we do, because of our actions. The feeling of fatigue is often the *result* of what we do. What is more, some feelings are simply the mental *representation* of what we do –this is what we can call feelings of agency, which are the feelings of the action we perform. This is the line of defence that I shall take with respect to effort's genus. I shall now argue that the phenomenology of effort refers to the feeling of doing something. The feeling of effort is the conscious mental representation of an action that I am doing –from which it follows that efforts are actions and that agentivism is true. To recall, these are the two prima facie proposed categories for effort:

> Teleological Action: the manifestation of an individual's capacity to cause a change in order to reach a goal
>
> Sensation: the access-conscious mental representation of an event

[14] Many thanks to Fréderique de Vignemont for bringing this point to my attention.

1.3. Defence of Agentivism

When we look at the research on effort as a whole, it clearly appears that we attribute both agentive and phenomenological predicates to effort. I take this complexity at face value. Consequently, it entails that there are two dimensions to the phenomenon of effort: a phenomenological dimension and an agentive dimension. But how are these two dimensions related? My proposal is twofold and comes as the following syllogism. The first step is to acknowledge that the most plausible understanding of the phenomenological dimension of effort is representational: the feeling of effort is a qualitative mental episode, whose intentional object is an effort. The second step is to turn our attention to scientific theories of the feeling of effort and to acknowledge that they identify the intentional object of the feeling of effort with an agentive event: the feeling of effort is the conscious experience of doing something, that is, of performing an action. There is a feeling of effort indeed, but it is the feeling of acting in some way; therefore, efforts are actions. In a first time (1.3.1.), I present the argument. In the second time (1.3.2.), I lay out the first premise; in the third time (1.3.3.) lay out the second premise.

1.3.1. General Argument

That there is, or at least that there can be a phenomenological, felt, experienced dimension to effort, there is no doubt. The question is: how fundamental is the phenomenology of effort? Is it fundamental enough that we should consider placing efforts inside the category of experiences, feelings, and sensations? We can feel many things: pleasures, pains, tables, tensions, animosity, ruggedness, confidence, anxiety, trees and cats on our legs. But not anything that we feel is just a feeling. That we can feel the cat on our legs doesn't entail that cats are feelings. They are rather the content or object of our feelings. Is effort just a brute feeling (not representing anything beyond its phenomenal quality), or is there a feeling of a particular object that is an effort? We must clearly distinguish the two following claims:

Reductive experientialism: efforts are feelings.

Representational experientialism: there is a feeling of effort.

I defend the view that there is a feeling of effort, which is the conscious experience of a certain content. The content of the feeling of effort just is effort. But when we look at the different scientific

analysis of the feeling of effort, they suggest that feeling effort is feeling that I do something, that I act. Hence, my general argument for agentivism simply is the following one: there is a feeling of effort, but effort is not a feeling; and the feeling of effort is the feeling of something that I *do*. Ergo, effort is something that I do; an effort is an action.

P1 The feeling of effort is the representational experience of an effort.

P2 The feeling of effort is the representational experience of an action.

C. An effort is an action. [15]

1.3.2. The Feeling of Effort is Representational

Representationalism. I shall motivate P1 in the following way: on the one hand, I shall show that the representational understanding of the feeling of effort makes perfect sense whereas, on the other hand, it is unclear what it would mean for effort to be a brute feeling lacking any intentional content. So, to begin with, my focus is on explaining what it means to apply representationalism to the feeling of effort. "Representationalism" can refer to two slightly different theories of mental phenomena.

I) Representationalism

On the one hand, it refers to the Brentanian idea that all and only mental phenomena have the property of "having something as an object", for the perceiver to whom these mental phenomena occur (Brentano, 2012, II, 1). Brentano also holds that intentionality entails consciousness, and vice versa. Conscious episodes are experiences of intentional objects; experiences of intentional objects are conscious episodes. Representationalism applied to the feeling of effort means that the feeling of effort

[15] Two remarks are in order. (i) First, recall that I use the verb *being* loosely here. Efforts "are" actions in a sense that remains to be specified. Effort could refer to a very specific type of action; it could refer to a certain way of acting; it might refer to actions that have a specific property; or it might even refer to a property or part of an action. The goal of the first part is only to demonstrate that efforts belong to the general category of things we do; it is not to understand how they belong to that category. (ii) Second, this argument ultimately suggests that there is no genuine support for experientialism in the reductive sense. Indeed, at the end of the day, the tension rather obtains between what I will call objectivists and subjectivists about effort. While objectivists believe that we can make efforts without being phenomenally conscious of it (the feeling of effort is not essential to effort), subjectivists maintain that the feeling of effort is essential to effort (efforts are actions that have the essential property of being accompanied by the feeling of effort).

is the intentional experience of effort, an experience of something that we call "effort", and it is a conscious experience.

On the other hand, representationalism can also refer to the cognitive representational theory, which is the view that all mental states are representations, whether or not they are conscious. Mental representations are information-bearing entities with semantic values: they are mental states that have objects and whose truth-value can be evaluated with respect to those objects. Unlike Brentano, the cognitive representational theory holds that it is possible to have a mental representation of some content without being conscious of it.

The representationalist view that I endorse is Brentanian. In this work, I assume a localized and reductionist-neutral representational theory of the experience of effort. It is localized in the sense that the assumptions I make only apply to the experience of effort. It is a reductionist-neutral thesis in the sense that I do not claim whether or not the intentional content of an experience (what it is "about" for the conscious agent, in Brentano's sense) is ultimately reducible to its neurophysiological realizers or whether it supervenes on them (though I lean towards the supervenience option). Finally, I assume that the term "experience" refers indistinctively to the sense, sensation, or feeling of effort, at least at this level of generality.[16]

> Representationalism about the experience of effort: the experience of effort refers to the (access or phenomenally) conscious mental representation of an intentional object that is an effort.

Content. Thus, I will assume that the experience of effort is the awareness, sensation or feeling of something that is an effort. With that assumption in mind, I will review the four main theories of the feeling of effort.[17] In so doing, we will look for three things. The first thing that we are going to look for is the intentional object of the feeling of effort –namely, effort itself. The question we are going to ask to the four theories under scrutiny is the following: since the feeling of effort is the intentional experience of an "effort", then what is an effort? When I feel my effort, what is the (experiential, intentional, representational –I shall use these terms synonymously) content of this experience? What is this "effort" that my conscious experience is about? For instance, centralists suggest that it is the experience of trying

[16] I avoid the expression "perception of effort" because perception does not clearly denote the idea of a vivid and distinct experience as the words "feelings", "sensations", and "sense" do. The feeling of effort is arguably easily recognizable, in a way that perceptions may not be.

[17] As aforementioned, most theories of the feeling of effort seemingly conceive effort as a mental representation of which we are phenomenally aware. For this reason, I mostly use "feeling". But I leave opened the possibility that on some occasions the phenomenology of effort could be merely functional, that is, access conscious only.

to move. Peripheralists suggest that it is the experience of tension in one's muscles. "What is effort" is the question we are going to ask to the four scientific theories of the feeling of effort. However, these theories do not directly reply to that question. Their replies are indirect. *How* are we going to question them?

Realizers. To see their replies, we shall look at the heart of their theory. Thus, we are going to look for the proposed neurobiological realizers of the experience of effort – the physical processes that make the experience possible. Describing the realizers of an experience requires scientific inquiry and concepts. For instance, centralists argue that the neurophysiological basis of the sense of effort is an efferent signal (a motor command being produced by the brain and sent to the muscles), while peripheralists argue that it consists of afferent signals (sensory signals coming to the brain from the muscles). Our task will be a problem of translation. We are looking for the intentional object of the awareness of effort. The intentional object of the feeling of effort (effort) can be described in ordinary language, in contrast to its physical realizers. What we shall do is to try to translate *what happens in the body when we have an awareness of effort* to *what is effort for the conscious mind*.

The distinction between a conscious intentional object (effort) and its realizers (for instance, efferences) raises the problem of the relation between an experience and its physical realizers. Does the experience supervene on its neurophysiological realizers or is it ultimately reducible to them? On the one hand, the theories we will study do not reflect on the nature of the relation between the conscious experience of effort and the signals allegedly responsible for its obtention. It suggests that they simply identify them and endorse some strong form of reductionism. On the other hand, they use two distinct vocabularies: an ordinary vocabulary, which is used to describe the conscious experience of effort as the agent might describe it through introspection ("trying to move my body", "the tension in my muscles"), and the scientific vocabulary of neurophysiology, which is used to describe the objective processes "behind" the conscious experience ("efferent signals"; "afferent signals"). The presence of two distinct vocabularies leaves enough room to distinguish the intentional object of the experience of effort (effort) from its neurophysiological realizers. I will thus maintain that there is at least an apparent distinction between what I experience when I feel effort (namely, the effort I make) and the neurophysiological activity making it possible for the experience of effort to obtain (what happens in my brain and nervous system).

Valence. Thus, the main question we will ask to the theories of the feeling of effort is: what is effort? What is the intentional object of the awareness of effort? To understand their answer, we will have to look at their theory of the neurophysiological realizers of this awareness. In passing, we are also going to look for the phenomenal valence of the experience of effort, if any. Indeed, the experience of effort potentially may have a positive or negative valence for the phenomenal consciousness. Such valence is

positive or negative in an affective sense, like feelings of joy or pain usually are. It may also be "imperative": it may be experienced as commanding, pushing, and motivating a certain reaction, just like thirst pushes one to drink or seek water. I also accept the possibility that a conscious experience may not need any phenomenal valence. The phenomenal valence of an experience can be seen as what Brentano identifies as the judgment (love or hate) about the intentional object, although I assume that experiences may not be phenomenally valanced while Brentano believes that conscious experiences necessarily imply a love-hate judgment. Summing up, we will thus analyze the four theories of the feeling of effort and look for answers to these three questions:

Content of the feeling of effort: what the experience is about for the conscious perceiver – its intentional object. Namely: what is an effort?

Realizers of the feeling of effort: the neurophysiological basis of the experience of effort. Namely: what happens in the body when we experience effort?

Valence of the feeling of effort: does the experience of effort have any positive or negative phenomenal valence for the conscious perceiver? If so, does it motivate any particular behavior?

II) An Objection

Now, one could object that the feeling of effort is not representational, that it doesn't track changes in the world like the feeling of a cat "tracks" the changes of the cat on our legs or like the feeling pain tracks potential or actual damages in our body. The general argument comes as follow:

P1 The feeling of effort is the representational experience of an effort.
P2 The feeling of effort is the representational experience of an action.
C. An effort is an action.

I am now considering an objection against P1. There are two ways to refute P1. First, one can reject representationalism in general, but I will not try to defend representationalism against this general objection. Second, one can argue more specifically against the view that the conscious experience of effort is representational. This type of effort-targeted argument has been defended by Doulatova (2019). However, I shall deny that her argument is decisive. For indeed, it is impeded by the lack of an explicit,

introspective description of the feeling of effort. Her negative argument is to show that the feeling of effort does not covary with what several candidates:

> "An increase in the phenomenology of mental effort does not accompany a change in any of the following candidate representational contents: (a) representation of externally presented features, e.g. brightness, contrast, and so on (b) representation of task difficulty, (c) representation of the possibility of error, (d) representation of trying to achieve some state of affairs, (e) representation of bodily changes like muscle tension, or (f) representation of change in cognitive resource availability and lost opportunity cost", (Doulatova, 2019, p. 4373).

Pace the point (d) of her argument, I will show that theories of the feeling of effort are compatible with the feeling of effort representing an attempt to achieve some state of affairs. But that reply aside, there is a general problem with this argument. Her argument aims at showing that the feeling of effort does not covary with its usual putative contents, but the feeling of effort itself is not given any additional descriptive content, notably introspective. As a result, the initial object of analysis (the first person-accessible feeling of effort) is ultimately empty. Indeed, if the argument succeeds, then we know that effort is not about a number of candidates.

But at this point, we are not sure that we know what we are talking about. On the one hand, the feeling of effort is negatively determined, and on the other, no positive determination can compensate for the negative side of the argument. We lack an introspective description of what it is like to "feel" effort, or a more sustained description of the circumstances in which we feel effort. The argument, therefore, seems to support the conclusion that there is no feeling of effort, rather than the conclusion that the feeling of effort does not covary with any putative content. It is, however, highly implausible that there is no feeling of effort. At the very least, the claim would require a serious error-theory. Thus, we can feel entitled to apply the representational interpretation of the theories of the feeling of effort.

1.3.3. The Feeling of Effort is the Feeling of Doing Something

There is a feeling of effort. Once we opt for representational experientialism about the feeling of effort, we can ask: but then, what is the object of the feeling of effort? What is it about (Bermúdez, 2022)? What is effort, according to the conscious experience we have of it? If we scrutinize the four major theories of the feeling of effort, the answer is that it is an agentive event, as I shall explain right away. The first two theories are interested in the feeling of physical effort, the other two theories focus on the feeling of mental effort. Now, in this chapter, I am only going to give an overview of these four

theories. I will go back in more details during the second part of this work, where I will be analysing the possible views of effort's differentia.

I) Centralism and Peripheralism About the Feeling of Physical Effort

Centralism. The first possible view of the feeling of effort is centralism. Centralists argue that the feeling of effort is realized by efferent signals, moving from the brain and central nervous system to the muscles (Marcora, 2009; Pageaux, 2016). I feel effort when I feel that the motor areas of my brain send signals towards my muscles, in order to contract those muscles in a certain way. I will argue that centralism endorses the *volitional definition* of effort, which identifies effort with the attempt to move one's body. Now, trying to move one's body is perhaps the clearest example of goal-directed action that we can think of, at least at a pretheoretical level. Consequently, it easily follows that efforts are actions. The feeling of effort is the conscious experience of trying to move one's body; but trying to move one's body is acting, therefore making an effort is acting. Again, I will develop this argument in more depth when I introduce the centralist's view of the differentia and definition of effort.

Peripheralism. A second and concurrent view is peripheralism. Peripheralists deny that the feeling of effort is realized by signals moving from the brain to the muscles. On the contrary, they argue that it is realized only by afferent sensory signals, moving from the peripheral muscles and organs to the brain (Borg, 1962; James, 1880). The feeling of physical effort is not the feeling of trying to contract one's muscles, it is the feeling of one's muscles being contracted. Peripheralism raises a problem for agentivism because muscles can be contracted in a purely passive way. Cramps are muscular contractions. Many muscles are contracted even when we sleep, sit or merely stand up. But sleeping or sitting are not actions, or clearly not necessarily. Consequently, the peripheralist view of the feeling of effort entails that effort is not necessarily an action. Here, one option is to reject peripheralism on the basis that it is just false. But my argument will rather show that we must amend peripheralism. For on closer scrutiny, peripheralism is incompatible with some of its key conceptual assumptions. At the conceptual level indeed, peripheralists maintain that the feeling of effort is the feeling of doing something. In fact, they even maintain that the sense of effort is the sense of activity *par excellence*, if not exclusively.

In light of this, I believe that we can give more importance to these initial assumptions than to the empirical theory. Thus, I shall propose that we accept the conceptual assumption (the feeling of effort is the feeling of activity by excellence) but that we reject the empirical theory (the feeling of effort is realized by afferent signals only). This analysis in turn suggests a modified version of peripheralism, according to which the feeling of physical effort requires both afferent and efferent signals to be

generated. The modified peripheralist view is, in this perspective, amounts to the view that the feeling of effort has a complex content, for it necessarily represents both that I try to contract my muscles (in line with centralism), but also that my muscles must be contracted (contra centralism). This updated peripheralist view of the sense of effort entails an *exercise-based view* of effort, which is the view that an effort is the intentional exercise of one's body, more precisely one's muscular system, in order to cause some changes in the external world. This is also a clear case of an action.

II) The Comparator-Model, Cognitive Control and the Feeling of Mental Effort

A third possible view of the feeling of effort is suggested by proponents of the comparator-model. Although it is not entirely clear at first sight whether it deals with the feeling of physical effort or the feeling of mental effort, I will argue that it is about the latter although it mostly relies on the discussion of physical examples. The rationale is that the feeling of effort can represent both mental and physical actions. Consequently, it can't be the feeling of a physical action only. That said, the comparator model mostly focuses on physical agency. With respect to physical actions, it defends that the brain can perform comparisons between the expected and actual sensory feedbacks of one's movements (Lukitsch, 2020; Pacherie, 2008). When the actual sensory consequences of my movement match the expected ones, I have a feeling of fluency or efficacy. But when the sensory effects of my movement do not match the sensory feedbacks I was expecting, I have a feeling of effort. The comparator model theory suggests several claims concerning the nature of effort. First, it suggests that an effort is an action that does not unfold as anticipated. Second, it also suggests that an effort is what the agent does to keep the action going, to put it back on track. These two options are compatible with agentivism, but they do not really do justice to the spirit of the model.

Third and finally indeed, the model suggests that an effort is an action that the agent performs with the noetic feeling that it is difficult for her, in the sense that she feels that she must do a lot it if she wants to perform it successfully. The feeling of effort presents one's action as requiring a lot of attention, mental control or physical energy. It tells the agent that she cannot perform the action easily, that she needs to do more, that she isn't sufficiently competent to perform it in an automatic or easy mode. I will opt for this third interpretation on the basis that it is the most interesting and original proposal of the three. It suggests a difficulty-based account of effort according to which an effort is a difficult action, where difficulty is defined in phenomenal terms –an account that is compatible with agentivism. The comparator-model is in fact developing a specific conception of difficulty which is the following. On the one hand, difficulty refers to the fact that the agent *feels* that she needs to do a lot, to deploy her mental or physical capacities above a certain threshold, if she wants to succeed in her action (it is a phenomenal

account of difficulty, or an account of phenomenal difficulty). On the other hand, the comparator model identifies the proximal cause of this feeling with error prediction signals. In the case of physical actions, those signals are generated by the mismatch between anticipated and actual sensory afferences. In any case, the different interpretations of the model are compatible with agentivism.

Finally, researchers in the cognitive control literature argue that the sensation of effort is in fact constituted by cost signals resulting from subpersonal neural calculations (Carruthers, 2021; Sripada, 2021). It is the view that the feeling of effort occurs because the agent is, according to her brain and in terms of evolutionary standards, investing too much mental control in a specific task. The feeling of mental effort plays an evolutive function, which is to motivate the agent to save her mental control resources, so that she can allocate them to other tasks. It is the unpleasant motivating feeling that I should stop doing what I am doing. Its unpleasantness fulfils its evolutive function because it motivates the agent to do less, to stop investing control, or at least to do it differently. Researchers in this literature are interested primarily in the feeling of mental effort. But their view is nevertheless compatible with agentivism. First, it may be compatible with the view that mental effort is the intentional allocation of mental control, which is an action. Mental effort would be mental control, whose allocation is felt on some occasions, although not necessarily. This is an objectivist control-based approach: making an effort is investing mental control, whether the agent feels it or not. Although the view is intuitively plausible, it is not the best translation of the theory's spirit.

Secondly indeed, the theory rather suggests the subjectivist view that mental effort refers to the exercise of mental control, only if it is felt. Merely allocating control isn't an effort. But if the allocation of control goes above a certain threshold and triggers, for that reason, the unpleasant feeling of effort, then allocating mental control is an effort. Now, it is not entirely clear whether the program endorses the simply control view or the felt control view. Note that, if it endorses the latter, it will also construe the feeling of effort as a noetic feeling. But while the comparator model depicts the feeling of mental effort as the noetic feeling that I need to do a lot to perform the action successfully, the cognitive control research program construes it as the noetic feeling that I am doing too much. I favor this later interpretation because it fits better with the explicit cognitive control theory. On this interpretation, the cognitive control theory defends a *subjectivist* agentivist view of effort: the view that an effort is an action that is essentially felt in a certain way.[18] The feeling of effort is depicted as the feeling of using an executive function of the mind too much. So, acting effortfully is using an executive function of the mind

[18] To recall, I shall distinguish phenomenalist (or subjectivist) from objectivist theories of effort. Both are agentivists. But the subjectivist view maintains that an effort is an action with some essential phenomenal, felt property; while the objectivist maintains that an effort is an action that may not have any phenomenology whatsoever.

in a certain way (namely, too much). Deploying an executive function in a certain way is acting; an effort is an action thereof.

Conclusion. So, in conclusion, theories of the feeling of effort clearly describe the object of the feeling of effort as an action. Peripheralism is an exception, but I maintain that we must either reject it or amend it. Thus, effort appears to be conceived as an agentive event, even by those who approach the phenomenon through its phenomenological aspect. This is good evidence that effort falls on the agentive side. But if effort falls on the agentive side, where does it fall exactly? What is the place, role or function of effort in the general category of agency? If we want to answer this question with precision, we need to say a bit more about actions and agency.

2. The Nature of Agency

Introduction. The Aristotelian methodology tells us that definitions begin with the identification of the genus of the explanandum. The most plausible view of effort's genus is agentivism, which is the view that efforts belong to the category of actions. But now the question is: what does it take for an action to become an effort? When does agency become effortful?[19] This way of framing the question relies on two assumptions: first, that agency has modes; second, that we have a clear understanding of the nature of actions. In this chapter, I will thus motivate, or at least explain, the claim that agency has modes. It is the view that there is a basic level of action that we can complexify by adding properties. At the same time, I will also develop a more thorough analysis of action than in the previous chapter. For if there is no crystal-clear understanding of what agency is (or at least of the meaning of the term that I employ), then there is no clear understanding of the nature of the genus of effort. But if we don't clearly understand the genus of effort, there is little chance that we can understand effort, nor can we understand what it means for effort to be a mode of agency.

In the first section (2.1.), I introduce four philosophical proposals about the nature of action. These four proposals are good representatives of the main definitional options, although they don't exhaust the theoretical space. These options are volitionism (an action is the willing of a bodily change), intentionalism (an action is a bodily event caused by an intention), structuralism (an action is a telos-directed event) and causativism (an action is the causation of a change by an agent). In the second section (2.2.) I argue that we must distinguish agency from its modes. Modes of agency can be described semantically as adverbial modifications of "action", and they can be described ontologically as actions with some supplementary property. This distinction helps to hierarchize the main definitions of action in terms of fundamentality without rejecting them and it justifies the idea that we can understand effort

[19] During this chapter, I will be wavering between using "effort" as a count-noun (as in "making an effort", where effort appears as an attempt or action in its own right) and using "effort" as a mass-noun (as in "acting effortfully", where effort appears as a property of some genuine action). The two descriptions suggest two distinct ontological views. The count-noun suggests that efforts are identical to actions, the mass-noun suggests that efforts are rather properties of action. If we take the count noun as primitive, the question is: what does it take for an action to become an effort? If we take the mass noun as primitive, the question is: what does it take for an action to become effortful? For the moment, I want to remain neutral. To that effect, I appeal to the fact that the view I will defend is, at this level of generality, the same in both cases: an action is an effort, or effortful, if its successful completion requires to overcome some resistance. This is what I call the agonistic view, which is the view that an action is an effort (and that agency is effortful) if it implies a struggle between the agent and some resistance. I develop this point at the beginning of the second section. I will ultimately endorse the view that efforts are identical to actions, and I will give two justifications: one during my discussion of conative effort in the third part, and another during my discussion of the formal essence of effort during the fourth part.

as a specific mode of agency, or efforts as specific actions. In the third section (2.3.), I focus on the basic concept of action, which is better explained by the causative view. In the fourth section (2.4.), I explain how we can move from action itself (as defined by causativism) to teleological and intentional action (with the help of the other definitions). Once this is done, we will be able to better distinguish the different senses in which we can ask the question: “just like reason turns animals into human beings, what turns actions into efforts?”.

2.1. Definitions of Action

There are many definitions of actions. Claims such are "some actions take effort" or "efforts are actions" are thus inherently ambiguate since actions may be different kinds of things. According to the definition that one endorses, actions can refer to volitions, intentional bodily movements or to acids corroding metals. Consequently, efforts could be the same type of events than volitions, intentional bodily movements or acids corroding metals. Thus, we need to make explicit what definitions of action there are, and which one(s) we endorse. If we don't know what an animal is, we have little change to really understand what a human being is and how it differs from the other non-human animals. Likewise, if we don't know (at least define) what an action is, we have little change to understand efforts. Therefore, we need to understand the nature of action. At least, we need to clearly explain what we believe actions are. However, the definition and nature of action has received various analysis and is the object of ongoing debate (eg., Alvarez & Hyman, 1998; Anscombe, 1957; M. Bratman, 1987; Davidson, 2001; Hornsby, 1980; Kenny, 1963; Massin, 2014; Mele & Moser, 1994; Pacherie, 2008; Preston & Wegner, 2009; Wright, 1977).

We are not going to frontally engage with the abundant and ever-growing literature on the nature of action, otherwise we will never be able to analyse effort. But we face a challenge. On the one hand, not defining action entails being ambiguous. We thus need to endorse one particular definition. But endorsing one definition of action entails being exclusive, that is, rejecting many other definitions of actions. I embrace the latter horn of the dilemma, but I will try to show that we can endorse a definition of action without rejecting the others. I shall now introduce four established definitions of action. By these "established" definitions, I refer to four possible definitions that can be found in the literature. Definitions of actions are much more common than definitions of effort. Now, I don't claim that these four definitions exhaust the theoretical space, nor do I claim that the way I state them precisely represent the views of all authors. But I believe they roughly represent the most general available options in the contemporary philosophical theoretical space.

Volitionism is perhaps the most intuitive definition. It is based on the intuition that the difference between passivity and activity amounts to the difference between the fact that my arm is raised from the fact that I raise my arm, id es, that I cause my arm to move up. It was notably defended by (Descartes, 1966, I, 18) and more recently by (Hornsby, 1980; O'Shaughnessy, 1973). It is the view that an action is a mental, private and simple event, which is the willing that a certain change occurs. The willed change refers to a bodily change, such as the raising of one's arm. Now, there are different shades of volitionism, so to speak. Some volitionists would deny that we should reduce action to the mental and private event

of willing. But my strategy here is only to distinguish the broader possible options and I should avoid moving into too fine-grained controversies.

Consequently, volitionism maintains that to act is to will and that the occurrence of the willed change is extrinsic to action.[20] Acting is willing, whether the willed change is caused or not. In line with this claim, volitionists usually recognize the possibility of naked tryings, or willings (and hereby actions) without results, actions that don't cause anything. They believe that naked tryings are possible in the sense that they consider that the agent whose arm is paralyzed and who unsuccessfully willed to raise it, nevertheless performed an action (Armstrong, 1973; Hornsby, 1980, chap. 3). Volitionists often disagree regarding the question of whether a successful willing is the same type of event than a failed willing (for an unitary approach, see Armstrong, 1973 and Broadie, 1965; for a disjunctive approach, see Hornsby, 1980 and O'Shaughnessy, 1973; for an overview, see Massin, 2014). It was criticised during the 20th century on the basis that volitions are psychologically, grammatically and ontologically mysterious (Ryle, 1949).

The *intentionalist* view (Davidson, 2001; Mele & Moser, 1994) is based on the premise that we can and have to distinguish mere natural events (mere "behaviour" or "happenings") from those events that are actions. The distinctive criterion is a specific causal structure according to which an event is an action if it caused by a specific sort of mental state (for that reason, it is often called the *causalist* view of action). Usually, it is proposed that a bodily event is an action if it is caused in some sense by an intention or a complex of cognitive and conative states, but we can also imagine that it is caused by a volition. If you believe that an action is a bodily event caused by a mental episode such like a volition, you are not a volitionist (in the nomenclature that I am using) because you don't restrict action to a mental event. On the contrary, you identify action with a bodily event caused by a certain mental event, namely a volition. In the Davidsonian perspective, a bodily event, an overt movement, is an action if it is caused, at least under one description, by a mental state which is a primary reason. A primary reason is a complex mental state episode composed by a pro-attitude towards some possible state of affairs and a belief that the desired state could be reached, caused, by a certain bodily movement.

The *structural* view is the view that an action is a goal-orientated event or process. In that respect, actions are not restricted to intentional *bodily* events. According to the structural view, anything done intentionally or teleologically (such as omissions) can be identified with an action.[21] Finally, the *causative*

[20] The conditions of the occurrence of the willed change can also be understood in occasionalist terms (Malebranche, 1979, III, ii, 3). According to the occasionalist perspective, the willed change will be caused by the willing, as long as God or good psychophysical conditions enable it. In other words, the agent who wills to move her arm is not the determinant of the success of her willing, or not the only or principal determinant.

[21] The distinction I make between intentionalism and structuralism is logical rather than empirical, in the sense that it represents rough logical options rather than real authors' positions.

view (or *causing view*) is the view that an action is the causation of a change by an agent. It was successively defended and developed by several authors in the wake of Von Wright's 1963's work (Alvarez & Hyman, 1998; Massin, 2014; Wright, 1977).

Volitionism: an action is the willing of a bodily change (whether the change ensues, or not).

Intentionalism: an action is a bodily change caused by a specific mental state (such as a volition, intention or primary reason).

Structuralism: an action is a goal-orientated event.

Causativism: an action is the causation of a change by an agent.

These four theories entail different quantifications of actions. Volitionism reduces actions to willings, that is, to mental and private events. Willings aim at causing bodily changes, but bodily changes are not essential to action. An action is a volition whose habitual result, a bodily change, is external to the volition. Some volitions fail to cause anything. On the other hand, intentionalism does not reduce action to an internal and private event. Actions are *bodily changes* caused by a certain mental state such as an intention, primary reason or volition. An action according to intentionalism is bigger than an action according to volitionism. Indeed, an action is constituted both by a bodily event and some antecedent mental cause. It is not restricted to a mental event, in opposition to the volitionist views. Actions are volitions (mental events) according to volitionism; actions are intentional bodily events according to intentionalism. In the intentionalist perspective, a mere bodily event is not an action; just like a mere willing or a mere intention is not an action. A bodily event is an action if and only if it is caused by the right mental event, be it a volition, an intention, a deliberation, etc. For simplicity, I stick with "intention".

Intentionalism reduces actions to intentional *bodily* events. Structuralism does not. It identifies actions with goal-directed events, be they bodily movements, omissions or mental events. Structuralism thus entails that they are more actions than intentionalism does. Finally, causativism entails a massive inflation of the number of actions that there is, to the extent that actions are not reduced to psychological events (willings) or to psychologically determined events (intentional or goal-directed actions). There is an action whenever a change is caused by an agent, and there may be many agents and agent types. My proposal is that these theories simply track different sorts of action. Causativism targets the most basic level of agency; structuralism targets goal-directed agency; intentionality targets intentional bodily agency. I reject volitionism on the basis that it does not refer to an action: merely

willing is not acting, for acting is causing a change and merely willing a change is not doing anything in that sense.

2.2. Distinguishing Action from its Modes

My proposal is twofold. On the one hand, I postulate the distinction between action itself and its complexifications; I distinguish agency from its modes. On the other hand, I argue that causalism defines basic agency while the other definitions rather target modes of agency. Indeed, it seems to me that many definitions of actions are not so much about actions; for they rather target specific modes of action such as *intentional*, *voluntary*, or *free* actions. They are complexifications of a basic genus that is "action". Mental actions, physical actions, automatic actions, intentional actions, voluntary actions, means-end actions, final actions, moral actions, free actions, compulsive actions, automatic actions… all are actions. But they constitute different modes (or species) of action. In line with our Aristotelean strategy, I think we must define action before defining any of its modes. We need a definition of the encapsulating category ("action") before defining the encapsulated sub-categories ("voluntary" action; "intentional" action, etc.). So, the first claim I defend about the nature of action is that we should define the genus "action" before its species such as "intentional action" for instance (or effort – my analysis is based on the claim that the concept of action is more basic than the concept of effort).

The second claim I make is that the causative view targets the basic level of action; whereas the other views target less basic explananda. Intentional, teleological, goal-directed, free, moral… actions are modes, modalities, complexifications, specifications, modifications of *action*. They are actions with some supplementary property, in virtue of which they become teleological, intentional, free, etc. But the definition of a mode of action (for instance, intentional action) presupposes the definition of action (Wolff, 2004, pp. 181-8). The action-explanandum is *what* remains once we have retrieved any psychological, evaluative or representational properties to action. Intentionalism, volitionism and structuralism target adverbial modifications of action (*intentional*, *voluntary*, and *teleological* actions), but they leave the basic concept unattended.[22] In that perspective, volitionism, intentionalism and structuralism presuppose what they should define. They explain what an intentional, goal-directed or

[22] One could object that if we can define action (the basic explanandum), it is because we can perform more complex actions, such as goal-directed or intentional actions. According to this objection, intentional actions are explanatory more basic because it is in virtue of being capable of intentional agency that we are capable to define more basic actions. In yet other words, the objection is that the basic concept of "action" is only accessible to beings who can perform "intentional actions"; therefore, intentional, conscious, voluntary… actions are more basic than action in that sense. However, this objection considers a distinct problem, which is the genealogy of our concepts. From an empiricist standpoint about knowledge, it is possible to argue that our concept of action is revealed to us through the conscious experience of goal-directed actions. But our purpose here is solely to introduce a definition of our basic concept of action, whatever its origin (a priori or a posteriori, intuitive or linguistic, etc.).

voluntary action is.[23] But they do not explain what an action, a mere, simple, basic action is. Defining the intentionality, teleology or voluntariness of action is not defining action. For once we have explained what makes an action intentional for instance, we are yet to explain why it is an *action* in the first place. Action, the explanandum, is presupposed and not explained. Defining intentional (voluntary…) actions is not defining action simply because the definiendum is presupposed by the definiens. We need to define action before we define its modes.

Secondly, these definitions explain what is arguably relatively clear (the causation of a change by an agent) by something that is arguably relatively less clear (the will, intentionality, mind-body causation and teleology). For while it is pretty much clear that some things ("agents") cause changes, at least pace Humean sceptic arguments on causality, it remains questionable whether there are such things as intentional, voluntary and free actions as well as mind-body causations. Volitionism, if we don't reject it on the basis that a volition may not "do" anything, defines a specific putative mode of action, which is a dualist and voluntary mode of action. But not only is it implausible that we act only when we will to do a certain movement, it is also unclear whether or not there is anything as mind-body causation. Intentionalism focuses on intentional actions, but it is implausible that all actions are intentional. Self-deception, bad faith, infrastructure and yet other phenomena suggest that we are not necessarily aware of the genuine intention we have when we act, if any. What is more, an acid does not intend to corrupt a metal; a drug does not intend to make one high. Yet, they "do" things, they cause changes. Structuralism identifies actions with goal-directed actions. But again, ordinary language does not reduce actions to teleological actions.

The causative view is the only definition that brings an answer to the question: "what is action, once we have retrieved its teleology, voluntariness or intentionality?" The causative view is therefore better in terms of fundamentality because it defines action itself rather than its modes; it is more basic, more fundamental. Any action, be it teleological, free, intentional, compulsive, moral, automatic… is first of all an action. The causative view is the only genuine definition of action. The question "what is an action?" is the question "what does remain once we have retrieved any retrievable property (intentionality, voluntariness…) to action?", and the answer is:

Action: an action is the causation of a change by an agent.

[23] Here, we can agree that the volitionist definition of action is a definition of voluntary (physical) action. If an action is a volition, and if a volition is an 'act of the will', then an action is a voluntary action. An action is a volition, a volition is an act of the will, and it seems implausible that the will acts unwillingly, involuntarily. However, volitionism so defined is probably incompatible with the causalist claim that any action implies the production of a change and should therefore be rejected.

Obviously, one can object that the notion of agent is not clear either. I don't deny that it raises difficult issues, but I do maintain that we can push these issues away for another time. An agent, as I will say just below, is a substantive individual to which we attribute the capacity to cause changes. Consequently, the challenge is to understand what a substantive individual is. This is a classic issue of metaphysics, which I do not pretend to solve. But as long as we accept that there are such things as individual substances (which I have assumed earlier when I introduced my ontological assumptions), then we can define actions as changes cause by agents as opposed to changes caused by mere causal forces. Changes caused by mere causal forces can be described as simple events, while changes caused by substantive individuals can be described as actions. Now, one can push back and deny that there are agents and maintain that causal forces only cause changes. I acknowledge the difficulty to answer this objection, but I maintain that there is a clear intuitive sense in which individual substances cause changes: even if it a causal force in the individual that causes a change, it remains that this causal power belongs in some sense to that individual (for a discussion of agentive and event causations, see Kistler & Gnassounou, 2007).

2.3. Action

I shall now introduce the causative view of action in more detail, for it is the basis of the meaning that I shall give to "action" throughout this dissertation. Especially, several aspects of this definition will be of central importance for the discussion of the formal definition of effort, such as the concept of the "object of an action" for instance. The fundamental premise on which the view is based is that the difference between events and actions is a matter of attribution: events are changes in things, merely attributable to causal forces; actions are changes that we attribute to some specific substantive causes. Second, the claim is more precisely that the concept or idea of action is the idea of a change that we attribute to (the causal power(s) of) certain specific individuals –substances that we call agents. An action is an event that we attribute to a certain cause, namely, an agent.

These are the two fundamental claims of the causative approach to action: actions are events attributed to specific causes, and these specific causes to which we attribute actions are agents. Two other claims deserve to be made explicit. On the one hand, the causative view entails that actions are necessarily productive, id est, that they necessarily entail the occurrence of changes, since actions are causations of changes (this doesn't mean that actions, when they have goals, necessarily succeed). On that occasion, I shall say a bit about the basic types of changes and hereby the basic dynamics of actions. On the other hand, the causative view entails that any action has an object –the spatiotemporally extended portion of reality that undergoes the change that the agent brings about. Finally, it must be said that the causative view is based on one fundamental premise which I will not discuss: as the name suggests, the causative view presuppose that there is such a "thing" as causation.

2.3.1. From Events to Actions

First, an action cannot be reduced to a change. An action is the *causation* of a change. Causation is a complex event which can be decomposed into a causative element and a resulting element.[24] For instance, let's say that a doorbell becomes rusted due to moisture. There is a cause, moisture, that causes the doorbell to become rusted. A certain causal power, moisture, air humidity, causes a change

[24] When I laid out my ontological assumptions during the second chapter, I identified basic events with the occurrence of a change and I assumed that basic events could compose more complex events. In this perspective, an action is a relatively complex event where the occurrence of a change (a basic event) is causally attributed to the manifestation of some individual's power (another basic event).

to a certain object. This instance of causation is decomposable into a causative part (the production of rust by humidity) and a resulting part (the change that is caused, namely, the apparition of rust, the fact that the doorbell transitions from not being rusted to being rusted).[25] Likewise, the action of raising one's arm can be decomposed into the causation, production or bringing about of a bodily change and the change brough about. An action is both the manifestation of some power, and the result of this manifestation, which is a change (Massin, 2014, p. 15).

The causative view of action is thus ultimately the view that the concept of action connects a change to a cause that "belongs" to a substantive agent. For instance, we attribute the change "raising the arm" to the substantive agent "Wittgenstein", as opposed to the change "becoming rusted", which we merely attribute to the causal power of air humidity, which is not a substantive individual. Referring to an action, talking about an action, is attributing a change to an substantive cause. Indeed, in its most neutral form, it seems that the concept of action refers to a linguistic act of attribution. Identifying an action, referring to an action, is attributing the occurrence of a putative change to (a putative power of) a putative agent. Of course, we can disagree as to which individuals we want to count as substantive causes: "this virus killed that organism; this acid corrodes that metal; the wind made the leaves fall from the tree; something made me change my mind; something triggered an avalanche".

The concept of change does not necessarily entail a reference to the cause of the change. It is possible indeed to describe a change without mentioning its cause: "this tree suddenly lost its leaves"; there was an avalanche; it was sunny, and it started to rain". On the other hand, the concept of action seems to necessarily imply a reference to the cause of a change –this seems a common assumption for both agent and event causalists. Talking or thinking about action is attributing the occurrence of a change to a cause and we can express this point by contrasting event and action. An event necessarily entails a change and so does an action. But what is added to the concept of action, that seems to lack in the concept of event, is the idea of a cause. While an event is a change undergone by some object, an action refers to the causation of a change.[26]

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[25] The definition is compatible with the view that we can only know powers through their effects –in other words, it is possible that we directly perceive changes and indirectly perceive (induce, imagine…) the causative processes.

[26] The distinction I make here between events and actions is consequently distinct from the Davidsonian inspired distinction between mere events and intentional events (that is, actions). The analysis I propose is that events and natural actions differ extensionally: an event-sentence refers to the occurrence of a change to a given object; an action-sentence refers to the occurrence of a change in relation to its cause. The sentence "this tree lost its leaves" refers to an event; the sentence "the bear made the leaves of that tree felt (when she climbed it)" refers to an action.

An event: the occurrence of a change

The idea of action: the attribution of an event to a cause (an agent or another event)

2.3.2. Basic Agents

An action is "an event + a cause". According to the causative view that I endorse, an action is the causation of a change by an agent. An agent is an individual (dispositionnally capable of) causing changes. It is a definite thing that, in some sense, can be said to be the cause of a change: "we can describe an agent as something or someone that makes things happen. And we can add that to make something happen is to cause an event of some kind, that is, to exercise the power to cause an event of that kind to occur. Our pre-theoretical talk of agency extends to animals and plants, and also to inanimate things". (Alvarez & Hyman, 1998, p. 221). Following Alvarez and Hyman's suggestion, I do not restrict the set of agents. After all, both our pretheoretical grasp and ordinary language suggest that rational beings are clearly not the only agents that there are. The sun tans our skin, opium makes us sleep. There could be supernatural agents (God, a bad demon, superman), industrial agents (a machine, a computer), natural agents (animals, a virus), inert agents (the sun), personal agents (you or me), supra-personal agents (a city, a country, an army, occident) and sub-personal agents (an organ, the rational and desiring parts of the soul). Which agents there are depends on what substantive individuals there are, which is a matter of further ontological dispute.

The causative view I endorse is based on the agent-causalist understanding of causation in action. Causation is not limited to agent causation, but the relevant type of causation for action is agent causation. An agent is an individual to whom we attribute the power causally responsible for the occurrence of a given change. Acting, for an agent, is manifesting a power that is in some sense the agent's power, a power whose powerfulness depends upon its belonging to that individual. A power is correctly attributed to an individual (which is hereby identified as an agent) if it is essential for the power under consideration that it is (a part of) the individual under consideration. For instance, the occurrence of a disease (a "getting sick" change) may be under some conditions identified with the manifestation of a virus' power to cause the disease in question. The virus is the individual, say, to which we attribute the power to cause the disease, in relation to the passive power (possibility) of the infected body to be infected. I discuss the nature of teleological and intentional agents during the next section .

Agent: a dispositional agent is a substantial individual capable of acting, that is, capable of manifesting active powers; that is, capable of causing changes.

2.3.3. Action Types

Any action *includes* a change. An action is not a change, an action does not cause a change; an action *is* the causation of a change, it necessarily has a change as a proper or intrinsic part (Wright, 1977, p. 39). There can't be an action if no change occurs. Consequently, actions are said to be factive or effective, in the sense that it is essential that any action includes at least one change (Massin, 2014, pp. 19-23).[27] If we think that some action occurs, we must think that some change occurs. An action necessarily has a change as a proper (necessary but insufficient) part.

Actions are causations of changes. What is a change?[28] A change can be defined as the transition from an initial state of affairs to an end state (Wright, 1977, chap. 2). The initial state of affairs can be a state properly speaking, but also a process, an event or an individual (Galton, 2012; Mourelatos, 1978; Vendler, 1957). A human being can change from being in love to not being in love (transition from one state to another state); one can change from warming up one's legs to warming up one's arms (transition from one event to another event); one can change from running to walking (transition from one process to another process). Acting is causing a change, whether it is causing a state (Solal causes Arianne to be in love), an event (the Union caused a strike last Thursday) or a process (Forest causes his running). To use a different vocabulary, we can also say that an action can be the causation of a continuant (a 3D printer causes the existence of an artificial heart) or of an occurrent (anger and resentment caused riots in Paris suburbs). Whatever is changed during an action, we call it the object of that action. Clarifying the notion of change will reveal useful for the discussion of the metaphysics of resistance.

Change: a transition from an initial state of affairs to another state of affairs.

Von Wright (Wright, 1977, pp. 27-30) distinguishes four elementary types of changes, which are related to four elementary action types.[29] I will introduce this distinction because it will be useful to

[27] The proposition that actions are factive is arguably incompatible with the volitionist proposal that there are naked tryings, or actions without results, actions that do not cause any change. If trying to move a paralyzed limb is an action, it implies that some change was caused.

[28] I do not address famous "the problem of change", which is the challenge of explaining why and in what sense a given individual remains the same while not being the same (that is, while undergoing some change).

[29] Von Wright discusses goal-directed actions, but we can also apply his analysis to actions more generally.

understand the different dynamics of effort later. An action is the causation of a change; an action type is the causation of a certain type of change. Von Wright begins by distinguishing two relatively intuitive actions. The most intuitive type of action is what Von Wright calls a *doing*, which is causing an object to change from being *not-p* (the window is closed) to being *p* (the window is opened). Again, "*p*" describes a state of affairs that can be a state, an event or a process. The symmetrical negative action is what he calls a *destroying*, which is causing the world from being *p* (the window is opened) to being not-p (the window is closed).[30]

> ***Doing***: causing an object to change from being *not-p* to being *p*.
> ***Destroying***: causing an object to change from being *p* to being *not-p*.

Von Wright also identifies two other types of changes, which he calls the preserving and suppressing of *p*. These two types of actions can only be performed if the object is determined to change "on its own", independently of any action from the agent. If the world is determined to change from *p* to *not-p*, then one can cause the world to change from being *p* to being *p*, in the sense that one can prevent the world from becoming *not-p*. The agent can cause a change which is that the world does not become *p* although it was determined to become *p*. For instance, one can cause the window to remain opened by preventing wind gusts or bad demons to close it (the "preserving of p" in Von Wright's typology). An agent can also act in such a way that she prevents the world from undergoing a positive change. If the world is determined to change from *not-p* to *p*, one can cause a change that is the transition from *not-p* to *not-p*. One can "preserve the opening of the window" by preventing the bad demon, the storm or a bear to open it.

> ***Preserving***: causing an object to change from being *p* to being *p* (preventing it from becoming *not-p*).
> ***Suppressing***: causing an object to change from being *not-p* to being *not-p* (preventing it from becoming *p*).

One could object that a transition from *p* to *p* (or from *not-p* to *not-p*) is a "non-change" and not an action. With Von Wright, I maintain that preventing the production of a change is causing a change.

[30] The distinction between doing and destroying may be descriptive to the effect that we can interchangeably redescribe them. For instance, we can say that destroying the state of affairs "the window is opened" is creating the state of affairs "the window is closed"; or vice versa.

Indeed, preventing the window from being closed by the wind is preventing the occurrence of a change that is bound to occur. The transition from *p* to *p* is a change; and causing the transition from *p* to *p* is acting. First, a change did indeed occur during the transition from *p* to *p*. Before the agent acts, the world is in a state *a*: it is determined to become *not-p* while it is currently *p* (the window is opened and is determined to become closed). After the agent acts, the world is no longer determined to become *p* and it has in fact not become *p*. The world is now *b*: the window was opened and determined to become closed, but the window was not closed and now the window is not determined to become closed anymore. The agent responsible for this change has acted. She has prevented a change from occurring and she has hereby caused a change. Preventing a change from being caused is causing a change as well as it is manifesting a power. Preventing the window from being closed is manifesting the power to cause the window to remain opened. The different types of change and dynamics of actions are summed up in two tables on the following page.

Typology of changes	**Positive changes**	**Negative changes**
Overt changes	Transition from *not-p* to *p*.	Transition from *p* to *not-p*.
Causal changes (iff the world is determined to change from its initial state to a distinct and incompatible end state)	Transition from *p* to *p*	Transition from *not-p* to *not-p*

Typology of actions	**Productive actions**	**Repressive actions**
Doings[31]	Causing a change that is a transition from *not-p* to *p*.	Causing a change that is a transition from *p* to *not-p*.
Preventings (iff the world is determined to change from its initial state to a distinct and incompatible end state)	Causing a change that is a transition from *p* to *p* –i.e., preventing the causation of *not-p*.	Causing a change that is a transition from *not-p* to *not-p* – i.e., preventing the causation of *p*.

[31] I deviate from Von Wright's vocabulary by calling "doings" both what he calls "doing" (positive doing) and "preserving" (negative doing) and by calling "preventings" both what he calls "preserving" (positive preventing) and "suppressing" (negative preventing).

2.3.4. The Object of Actions

Finally, if an action is the causation of a change by a substantive individual; what is changed during an action? I assume that any action implies the causation of *at least one change to some object* (or "*patient*"). On the one hand, the expression *at least one* enables to remain neutral regarding action's individuation while, on the other hand, the expression *object* enables to remain neutral regarding the nature of actions' objects (or "patients").

First, the quantifier "at least one" preserves the definition's neutrality with respect to fine-grained action's individuation indeed. If an action was defined as the causation of one change, and *one* change only, it would impose an *a priori* restriction on how we should count and distinguish actions regardless, for instance, of any accordion effect (M. E. Bratman, 2006; Feinberg, 1970). I thus stipulate that at least one change must be caused, but the definition is also compatible with the view that several changes can be caused in one action. This assumption hopefully offers sufficient plasticity to accommodate different perspectives on the numerical identity of actions.[32]

Second, the expression "object" is used as an encompassing conceptual tool. The causative view entails that, whenever an action is made, some change is caused. But if a change is caused, that change must be caused *to* something. Something must be changed. The thing receiving the change is often called the object or patient of action and I will follow this tradition (Kenny, 1963, chapters 8 and 9). Now, there are arguably various types of patients. The patient of an action may be an individual or substance ("the cat scratched Aristotle"; "the potter broke the vase"), but it can also be a situation, a process or some undetermined "matter" whose rigid identification may prove challenging due to vague boundaries ("industrialist companies warm up the atmosphere"; "that guy killed the vibe"). An agent who acts can also be the patient of her action ("Seneca opened his veins").

The logical object of an action refers to any potential existing "stuff" that can be modified as an action's effect. Crucially, the object of an action needs not be a clear-cut individual or substance, for it can be a complex of several individuals and dispositions. There are some actions for which it is doubtable whether the patient is an internally coherent individual. A jogger modifies herself and her spatial position; a music band modify the listeners' emotions; a revolution changes people's mindset. One could

[32] For instance, imagine Wittgenstein's (automatic or teleological) action of raising his arm. One could argue that his action is the causation of one change, which is the raising of his arm, or the fact that his arm is raised. But one could also argue that his action is the causation of several changes, such as a neurophysiological change (the issuing of a motor command), some muscular changes (the contractions of certain muscles), an overt change (the raising), a symbolic change (a signalling to other drivers that he's going to make a turn), etc. One could also argue that these changes in fact amount to one change. I say "at least one change" to offer plasticity concerning this type of question.

argue that all changes can ultimately be attributed to individuals, but it is not evident. Conversely, one could argue that it is impossible to precisely identify the objects of actions. I don't deny that precisely identifying and individuating the object of a particular action can prove difficult, but I maintain that we can still refer to it as the object of action.

> Object: the object of an action is the portion of reality that is modified during the action (for instance, an individual, a state, a process, some dispositions, some matter).

2.4. Some Modes of Action

Now, one may raise the following objection. We can agree that the concept of "agent" is not restricted to agents like us, who are capable of consciousness and rationality. We can agree that it is true that the causative view of action is a better (for it is a more fundamental) definition of elementary actions. But we can also maintain that the causative view is insufficient to define efforts. Indeed, there are good chances that efforts are not just actions, but goal-directed actions, if not authentically human action. Indeed, I shall argue that efforts are goal-directed actions. So, we need a definition of the teleological mode of agency. If acting is causing a change for a substantial individual, what is acting teleologically? This section introduces the minimal but crucial modification of action that is *teleology*. Indeed, one of the most basic but most important property that can be added to action is goal-directedness. I will also mention two other important modifications of action, namely *intentionality* and *authenticity*. Not only these two complexifications will be useful later for the discussion of effort, but they also constitute good illustrations of what a mode of agency is.

2.4.1. Teleological Action

We can distinguish modes of action by adding properties to the basic elements of action. One of the most basic properties we can add to basic actions is teleology indeed. The acid corroding a piece of metal does not have any goal when it acts so. But many actions are performed in relation to an end, goal, telos or function. Teleology is a minimal complexification of action that is essential for the understanding of further complexifications. We need a minimal understanding of teleological actions before enquiring into other species of actions. Thus, we need to say a few words about teleological actions. I follow and endorse Massin's proposal (Massin, 2014) according to whom acting goal-directedly is doing something in order to do something else. For instance, it is running (doing something) in order to finish a marathon and be proud of oneself (doing something else, that is, reaching, achieving a goal). In the terms of the causative view, it is the proposal that a goal-directed action is the *causation of a change by an agent in order to cause some other change, that is, to reach a goal*. An agent acts teleologically if it causes a change in order to do something else, if she acts (causes changes) with some sort of end.

> Teleological action: a goal-directed action is the causation of at least one change to some object by an agent, in order to reach a goal.

Crucially, an agent can pursue an end instrumentally and without being aware of it. First, I assume that we can decompose actions into sublevel actions, such as subpersonal motor actions for instance. To illustrate, imagine that you are riding a bike to buy a cake at the bakery to enjoy a nice Sunday lunch in family. Let's say that there is one big action, which is taking one's bike to buy a cake in order to enjoy a Sunday lunch. Obviously, we can decompose it into sub-actions. For instance, there is a sub-action which is "riding a bike in order to go to the bakery". The important point, here, is that we can even decompose that very action.

For instance, imagine that while you are riding, a slight gust of wind momentarily disrupts your balance. To avoid deviating too much from your trajectory and, for instance, hitting the sidewalk with the wheels, you have to exercise a slight pressure on the handlebars. I believe there is a goal-directed action here. First, you did something actively, you exercised a power. Namely, you slightly pushed on the handlebar, you exercised your muscular capacity. Second, you did teleologically. Namely, you did it not to deviate too much from your trajectory, you did it in order to keep moving into a certain direction. Now, this teleological element is minimal and obviously derivate. Still, I shall assume that we can attribute teleology to minimal actions, such as, for instance, motor actions that may remain at the subpersonal level (for an account of subpersonal level actions, especially motor actions, see Pacherie, 2008). The second point is that the agent needs not be aware of all the goals she pursues. This is obvious if we accept subpersonal level motor actions. In other words, I assume an objectivist view of teleology where teleology isn't necessarily constituted by the representations that an agent has of her goals. In this context, I will be using the word "intention" to refer to the representation that an agent has of the goals she pursues.

2.4.2. Intentional Action

In the modification-based perspective, we can indeed also distinguish teleological actions from intentional actions. In this dissertation, I assume that a goal-directed action is intentional if the agent has a representation of the goal. Again, this doesn't seem necessary to me, as subpersonal motor actions suggest. To use another example, many biological creatures act teleologically, at least in some functional way, although they may not have genuine representation of the goal they seek. So, one may act and still *lacks* representation of some of the goals that she pursues. It also seems to *misrepresent* the genuine goal that one pursues. Indeed, it seems possible to believe that one acts in order to reach a goal *x*, while in fact one acts in order to reach a goal *y*. For instance, I can believe that I help someone out of benevolence while in fact I do it purely out of interest. It is a common excuse to say "my intentions were

good" when one did something bad. Now, one can have a good intention and fail to realize it, without failing to be aware of the genuine goal that one was seeking. But there are also cases, or so it seems clear to me, where we fail to understand the goal that we really pursue. In sum, several phenomena suggests that we can act without (an adequate) representation of the goal(s) of one's action(s). Moto actions, evolutionary teleology, and phenomena such as bad faith and self-deception suggest so. For this reason, I distinguish goals from intentions, where intentions refer to the (adequate or inadequate) representations that an agent has of some of the goals of her actions.

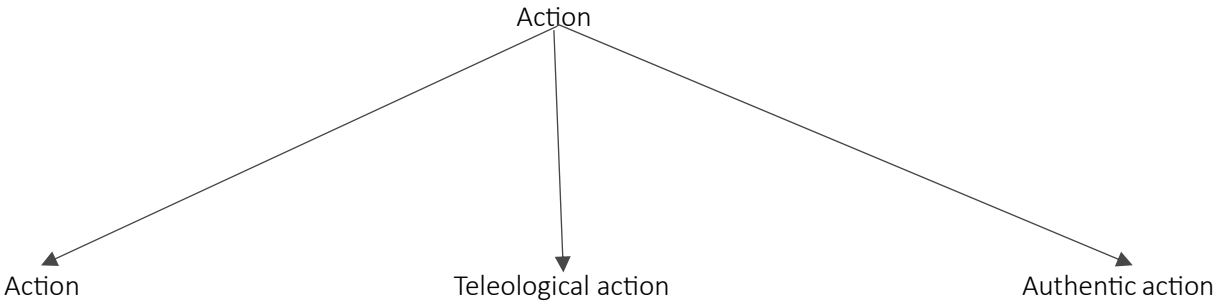
> Intentional action: an intentional action is a goal-directed action where the agent has a (adequate or inadequate) representation of the goal of her action.

2.4.3. Authentic Action

Intentionality and teleology are two modes of agency; these concepts refer to properties that we can add to elementary actions, turning them into modified actions. Now, one could object that what deserves to be called an action is, for instance, intentional action or rational action only. But this seems illegitimate for two reasons. On the one hand and as aforementioned, ordinary language does not restrict action to intentional or moral action (Alvarez & Hyman, 1998). On the other hand, restricting action to one mode of action is an evaluative attitude rather than a descriptive attitude. We should not reduce actions to authentic actions. There are probably certain modes of action that deserve to be called authentic actions in virtue of the fact that they express some putative fundamental value such as practical intentionality, freedom, real-self, morality, free-will, etc. For instance, we could say in a Kantian way that authentic actions are moral actions, actions performed in accordance with the moral law (Kant, 1785). Or we could say with Spinoza that authentic actions are actions determined by the genuine essence of the individual, as we shall see. But these are not the only actions that there are (in fact, they are probably the exception).

There are also basic natural actions, such as the action of an acid corroding a metal, a heart pumping blood, an engine burning fuel and outputting energy, an animal foraging food in order to eat, etc. Just like we wouldn't want to reduce actions to compulsive, zombie or automatic actions for instance, likewise we shouldn't reduce actions to its teleological or noble forms. This is however what we tend to do. It is important to define goal-directed, intentional, free or moral actions. These actions are arguably the most fundamental in practical terms, that is, in terms of values, freedom and responsibility. But practical fundamentality is not definitional basicness. Reducing actions to teleological, intentional or

voluntary actions amounts to missing the explanandum. Relying on the causative view of action, we can distinguish these four species of action, which compose four modes of agency:



Action: an action is the causation of at least one change to some object by an agent.

Teleological action: a goal-directed action is the causation of at least one change to some object by an agent, in order to reach a goal.

Intentional action: an intentional action is a goal-directed action where the agent has a (adequate or inadequate) representation of the goal of her goal.

Authentic action: an authentic action is a teleological action expressing some fundamental and authentic value (intentionality, morality, voluntariness, freedom, expressivity, an agonistic value…).

2.4.4. Activity and Passivity

The role of a definition of action is to account for the intuitive, pre-theoretical distinction between activity and passivity, between doing something and not doing something, between the manifestations of active and passive powers. But now that we have introduced the notion of modes of agency, we can see that there are in fact (at least) three ways to oppose action and passion: a kinetic distinction, a causal distinction, and a moral distinction. The most important distinction, in descriptive and non-moral terms, is the causal distinction and it is captured by the causative definition.

First, there is the intuitive kinetic opposition between rest and movement. On that perspective, acting is moving while not acting is being at rest. But this is not the distinction that the causative

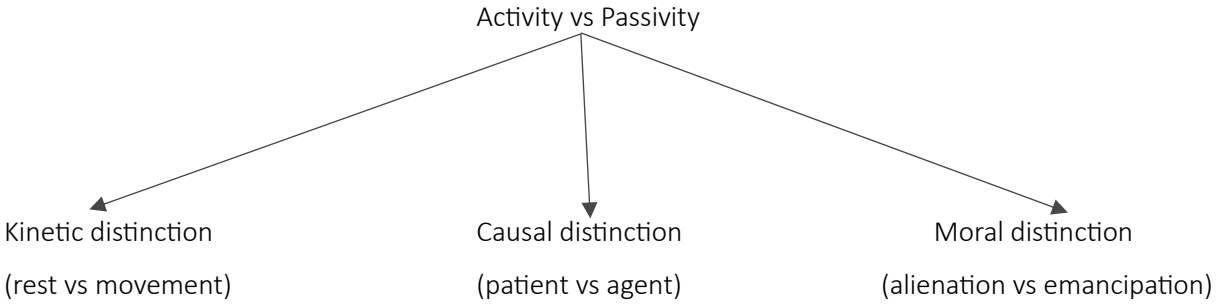
definition captures. Indeed, the kinetic distinction is arguably useful in everyday situation, but it is not fundamental enough to ground the intuitive distinction between action and passion. First, the notion of movement at stake is Newtonian and thereof relative to the perceiver. Second, one can be actively at rest and passively in movement. One can be active in resting, for instance if one grasp and hold on for dear life at the top of a cliff. Conversely, one can be in movement while falling without being active.

The causative view captures a more fundamental opposition between activity and passivity. Namely, the causative view captures the nature of the causal opposition between activity and passivity. The distinction is between being a cause and being affected by some causal power: acting is causing; passivity is being caused to be or to do something. Now, the judgments "being a cause" and "being an effect" are said of certain entities. According to the causative view I endorse, they are said of substantive individuals that are hereby called agents and patients. The opposition between action and passion is, thus and according to the causative view, the opposition that distinguishes agents from patients. A same entity can be an agent and a patient. It is an agent if it is said to be the cause of a certain change; it is a patient if it is said to be changed by something else.

Now, there is of course a very important ontological question which is the question of what types of agents there are. In line with the usual causative view of action, I admit that there are different types of them. For instance, we can arguably roughly distinguish three types of agents. There are natural agents: natural entities that we try to identify through scientific inquiry, and which can be said to produce changes such as, perhaps and for instance, acids, electros and other fundamental particles. There are also biological agents: biological entities that also cause changes but in a teleological, functional or evolutive way. There are also psychological agents: thinking entities that can also choose between different courses of actions; agents, in other words, that have specific representations of themselves and their powers. The causative view does not constrain to the adoption of one particular view regarding the identification and quantification of agents.

Third and finally, there is also a normative distinction. Indeed, when it comes to human beings, one can act in the sense that one is an agent and causes changes, while being passive at the same time. We can say that of the addict for instance. She is an agent, as she causes changes by her own specific powers –she deliberates, she implements, she succeeds. But of course, one can say that she is fundamentally passive in some sense in virtue of the fact that she is not so much the agent of her action, for addiction is. We can say without contradiction that a human being is both active and passive if we pay attention to the difference between the descriptive and the normative meanings of the active-passive distinction. The causative view is neutral regarding normativity. It says: acting is, for an agent, to manifest its powers to cause changes. We can then inquiry whether a particular action, in which an agent acts, is active or passive in normative terms. For instance, we can say that the addict agent is not active since she acts

because of addiction and that addiction is not, normatively speaking, an active cause of behaviour. The agent is acting, but in alienation. In sum, there are three sorts of distinctions between activity and passivity. The most basic is the opposition between agency and patency and it is captured by the causative view.



2.5. Conclusion

Let's recapitulate. First, I have introduced an Aristotelian methodological framework, which commands to first identify the genus of our explanandum, then the differentia. Second, I have introduced the tension between the experientialist view and the agentivist view of effort's genus. Third, I have presented an argument in favour of agentivism.

The argument comes as follow:

P1 The feeling of effort is the representational experience of an effort.
P2 The feeling of effort is the representational experience of an action.
C. An effort is an action.

A, there is some felt dimension to effort indeed, but this *feel* is an intentional, representational feel: it is a feeling *of* effort. I have motivated this first premise by endorsing a representational view of the feeling of effort. The representational view appears more plausible than the non-representational one, because a solid non-representational of the view is simply lacking. B, the feeling effort is an agentive feeling. It is the feeling of doing something: of *making* an effort, of *acting* effortfully. Feeling effort is, for an agent, to be in a mental state that represents an unfolding agentive episode, an episode that is an action of the agent. For instance, it for the agent to feel that she is trying to move (this is the volitional view of effort), or that she is voluntarily contracting her muscles (the is the exercise-based view of effort), or that she is investing some sort of mental control (this is the control-based view of effort). I have defended this second premise at length during chapters 6 and 7 by showing that theories about the feeling of effort entail definitions of effort that are compatible with agentivism. The conclusion of that argument is that efforts (which we can feel) are things we do, actions, and that agentivism is true. A, there is some phenomenology to effort, albeit a representational phenomenology. B, the phenomenology of effort is agentive, it is a feeling of doing something. Ergo, efforts are actions, things we do.

But now the question is: what turns actions into efforts? What is the differentia of effort? To clarify that question and in order to pave the way for the discussion of several points later on, I have discussed in more depth the nature of agency. I have motivated the endorsement of the causative view, for it is the definition of the basic mode of action. I developed the building bricks of this definition, which are the concepts of causation, agent, change and object. I have then distinguished several modes of agency, namely teleological, intentional and authentic agency. In passing, I claimed that it is possible to act

teleologically without being aware of some of the goals that one pursues, such as during subpersonal level motor actions. To recall:

Action: an action is the causation of at least one change to some object by an agent.

Teleological action: a goal-directed action is the causation of at least one change to some object by an agent, in order to reach a goal.

Intentional action: an intentional action is a goal-directed action where the agent has a (adequate or inadequate) representation of the goal of her goal.

Authentic action: an authentic action is a teleological action expressing some fundamental and authentic value (intentionality, morality, voluntariness, freedom, expressivity, an agonistic value…).

The distinction between agency and its modes, or between elementary actions and more complex actions, gives the possibility to frame the question of effort's nature in terms of mode: if efforts belong to agency, what is their place in agency? Which role should we give to the concept of effort in the general grammar of agency? What property must be added to an action so that it becomes an effort? Understanding the possible role(s) of effort in agency is the object of the next part. I will be doing an inquiry diving into important effort-related or effort-centred theories in order to identity the usual conceptions of the role that effort plays in our understanding of (human) actions. At the end, I will endorse a resistance-based approach that thinks of effort as "struggle-actions". The function of the concept of effort, according to this conception that I will be arguing for, is to refer to actions that imply a struggle, a fight, between an agent and some resistive power.

II. WHAT IS THE DIFFERENTIA OF EFFORT? AN INQUIRY

Introduction. It is now established that effort is an agentive phenomenon, that it belongs to the general category of agency. We also have a relatively clear understanding of what agency means, as I have made it clear which definition I endorse. Following Aristotle's method, we now want to understand where effort places itself in this general category. If efforts are actions, what is the specific difference of those actions that are efforts? What makes it the case that an action is effortful? In short, what is the differentia of effort? In this second part, I shall now proceed to identify usual conceptions of effort's differentia, that is, conceptions of what it is for an action to be an effort or to be effortful (a claim about the nature of effort's differentia constitutes a genuine definition of effort here). In other words, it is now time to identify habitual definitions of effort. These definitions must have two characteristics: on the one hand, they must be compatible with agentivism about effort's genus; on the other hand, they must contain a proposal about effort's differentia. The definitions I will introduce are compatible at the genus-level, but they are incompatible at the differentia-level, when it comes to identify which actions are efforts, why they are efforts, and what it means for an action to be an effort or to be effortful.[33]

But identifying such definitions is challenging. For as mentioned during the introduction, much research about effort leaves the definition of effort implicit. Since most definitions of effort are not already well-formed out there in an established and structured debate, they need to be excavated. Hence the label "inquiry" for this second part: since the space of views is yet to be clearly carved out, we need to go investigative the "state of art". Thus, I will inquiry into several bodies of research, or loci of interest, in order to identify common definitions of effort. To that effect, I inquiry into three coarsely

[33] I am wavering between two formulations of the question. On the one hand, we can ask: "what makes it the case that an action is an effort?". On the other hand, we can as: "what makes it the case that an action is effortful?". There is indeed a puzzle here, to which I will go back at the end of this second part. It touches on the question as to whether effort is a full-blown action in its own right, or whether effort is rather a property of an action. The former option entails an identity view of the token relation between one particular effort and one particular action: an effort is an action. It is better expressed by the expression "making an effort". The latter option entails a property view: an effort is not an action, but the property of an action. It is better expressed by the expression "acting effortfully". I remain neutral during this second part on that topic. I assume that both views are agentivist in some sense since they both essentially tie effort to action, whether it is in terms of actions being efforts or being effortful. I can remain neutral on that topic for two reasons. First, the Aristotelian method offers enough plasticity to do that. It is a specificatory methodology that is welcoming to each option. The question of effort's differentia, indeed, is: "what makes it the case that an action is an effort?" (in line with the identity view), "or that it is effortful?" (in line with the property view). Second, ordinary language doesn't seem to obviously favor either option, since we can perfectly ask the question in terms of identity-specification or in terms of property-specification.

chopped conceptual spaces: a space where effort is associated with notions such as limitedness, finitude and scarcity; a space where effort is strongly associated with the body and rather understood as physical effort; and a space where effort is strongly associated with the mind and rather understood in terms of (a feeling of) mental effort. I mostly adopt an *interpretative* and *descriptive* posture. The *critical* discussion of effort's differentia really begins at the end of this second part. The strategy is to observe our scientific representations of effort *as a whole*, hereby spotting key agreements but also and most importantly, key tensions in our understanding. As we shall see, this "general understanding" is filled with theoretical oppositions. Indeed, I shall reveal four antinomy-styled puzzles about the nature of effort. The argumentative dialectic is to reveal the chaoticity of effort's meanings in the first place, before organizing this theoretical space thanks to a resistance-based definition in the second place.

(3) The third chapter investigates philosophical and scientific theories that favour neither mental effort nor physical effort. In this unspecified perspective, effort seems to characterize a certain aspect of agency, which is the fact that it is performed by agents with limited capacities (hence the somewhat enigmatic "effort and finitude" title for this chapter). Effort does not refer to a subset of actions; it is a way to describe all actions so as to denote the finitude of the agents performing them. The chapter is divided in three sections. In this first one, I look at Spinoza's conatus-based approach. Effort seems to be conceived as the substance (or "real flesh") of actions. What we really do when act is striving, that is, trying to preserve or increase our capacities, to "persevere in our being". The second section looks at the investment-based approach, a view suggesting that effort denotes the depleting and costly character of agency. The third section discusses the infamous principle of least effort. It shows that effort is sometimes conflated with the mental or physical energy deployed during action; but that it can also be conceived as an aversive action –an action that the agent desires not to perform.

(4) The fourth chapter investigates theories restricting effort to physical effort. They share a basic conception according to which effort is the exercise of one's will in order to move one's body. I call it the volitional view of effort. In the first section, I illustrate this basic volitional conception of physical effort through an analysis of Hobbes' view, according to whom effort is *that*, which translates the mental representation of a movement into the voluntary performance of that movement. In the second section, I turn to the French philosopher Maine de Biran who later adds the idea that the body resists the will during such volitional actions. In a third section, I turn to two rival scientific views of the neurophysiology of the awareness of such efforts. Centralists and peripheralists conceive effort in a similar way but they are debating the nature of its neurophysiological basis: while centralists argue it is the feeling of the will trying to move the body (efferent signals), peripheralists maintain that it is the feeling of the body being exercised (afferent signals).

(5) In the fifth chapter, I turn to theories restricting effort to mental effort. As a matter of fact, these theories are mostly interested in the *feeling* of mental effort. In the first section, I inquiry the meaning of effort held by the defenders of the comparator model of action control and phenomenology. They suggest a phenomenalist and difficulty-based view of effort. On the one hand, effort seems characterized as an action that is difficult for the agent. On the other hand, difficulty seems characterized phenomenally: an action is difficult if the agent performs it with a feeling of effort, that is, with the feeling that it is difficult for her; that is, with the feeling that she has to do a lot, that she has to try hard. In the second section, I introduce the cognitive control research program. On the one hand, it could entail a simple control-based view according to which acting effortfully is exercising some mental control to inhibit some spontaneous reaction. But on the other hand, it also suggests a phenomenalist control-based view according to which mental effort is the performance of mental control accompanied with the unpleasant feeling of mental effort. The feeling of mental effort motivates the agent to give up investing control; it does so in virtue of its unpleasant phenomenology; and it does so because the agent's brain estimates that the deployment of control is becoming too costly in evolutionary terms.

(6) The sixth chapter sumps up the results of the inquiry, identifies four puzzles and brings a solution. The first section wraps everything up: the usual implicit definitions of effort, and the usual characterizations of its phenomenology. The second section identifies four antinomy-styled puzzles. To be clear, the general strategy is, on the one hand, to take for granted that there is at least some minimal truth in all the usual definitions of effort and, on the other hand, to observe the puzzles that stem out of this integrative picture. The first puzzle concerns the type-relation between actions and efforts: on one side, it seems that all actions are effortful; but on the other side, it seems that some actions only are effortful. The second puzzle concerns the phenomenology of effort: it seems that all efforts are felt, but also that some efforts only are felt. The third puzzle concerns the unity of the kind effort: it seems that effort is a unified kind, but it also seems that there are several species of effort. The fourth puzzle concerns the metaphysical kind of effort: on the one hand, it seems an action of its own; on the other hand, it seems a property of actions.

As a solution, I propose a "dualist resistance-based account": it is, first, the view that resistance is the differentia of effort and, second, that distinguishing mental from physical resistance already solves two puzzles by reconciling different antinomic aspects of effort. Efforts are attempts to overcome resistive powers. The cacophony surrounding their nature is due to the facts that they are intrinsically complex actions (because they imply some resistance) and that there are two species of resistance. Once we understand that, things start to get clearer: *every* physical action requires a physical effort, which is *not* essentially felt; but *only* some actions require a mental effort, which *is* essentially felt. In other words, the resistance-based approach explains and reconciles the disturbing variety of ideas about effort. But

before reconciling and organizing this "cacophony of ideas", let's their noise be heard. The pars construens will come later.[34]

[34] In terms of argumentative dialectic, this second part mostly constitutes a pars destruens in the sense that it reveals the problematic semantic inflation around effort. But it also paves the way to the pars construens of my proposal, for it will help me to justify the dualist resistance-based view (that will be defended in part three) on the grounds that it is a reconciling, organizing and clarity-producing theory.

Of course, I will have to explain how this dualist view doesn't threaten the unity of the kind of effort. I shall do that during the fourth part, where I will show that both physical and mental effort can be subsumed under the same formal concept –what I call the "agonistic" definition of effort. The agonistic definition is a formal definition of effort with two benefits: not only does it preserve the unity of the kind effort, but it also leaves the definition opened to an ontological exploration regarding what powers there are and, consequently, which species of effort there are. In other words, it subsumes the mental and physical species of effort under one concept, but it is compatible with there being other species of effort.

3. Effort and Finitude

The motivation behind this "effort and finitude" chapter is the twofold observation that those who strongly connect effort to key aspects of our finitude also tend not to distinguish actions from efforts (*all actions are efforts*). This triangular connection between effort, finitude and agency appears on three noticeable occasions. (3.1.) The connection between effort and finitude is blatant for Spinoza's conatus-based approach to effort, for conatus is precisely the concept he uses to define finite beings. But what about effort in this metaphysics? My interpretation of Spinoza's conatus-based approach is that it equates effort with the attempt to increase one's capacities (to "persevere in one's being" as he says). In this perspective, effort refers to the underlying structure of any goal-directed action. At the surface and objectual level, an action is an attempt to obtain a particular good; at the underlying and metaphysical level, an action is an effort: an attempt to increase one's power. Effort characterizes the real substance or "meat" of action, so to speak. Now, one can be suspicious as to whether Spinoza offers something else than an idiosyncratic approach. But the notion that effort might refer to certain finitude-related characteristic of action is not specific to him.

(5.2.) Many recent works, but also ordinary language, suggest an investment-based view of effort according to which effort refers to the depleting character of agency: an effort, they suggest, is the teleological depletion of scare resources. But this is precisely a description of any action: for a finite being, any action is also the investment and, hereby, the depletion of finite resources. Now, the investment-based view can be specified so as to be restricted to the mobilization of specific resources. But it is unclear what the motivation for this restriction is, and where to draw the line. The fundamental idea behind the investment-based view remains that effort points towards the depleting, costly character of agency, for one that is not God. (5.3.) In the same vein, some suppose that there must be a law of least effort. But I am dubious of the meaningfulness of this law. On the one hand, the law of least effort simply identities effort with energy: effort does not refer to the depleting character of action, effort refers to the energy deployed in agency, which we seek to minimize. But if effort just was mental or physical energy, a good principle of parsimony would require that we get rid of it and that we went with energy or attention instead. On the other hand, the law of least effort also suggests that effort refers to actions that an agent finds aversive to do. This aversion-based view seems plausible to me, but it seriously hinders the law.

3.1. Effort and the Conatus

Introduction. I shall start by studying the definition of effort in Spinoza's Ethics. After all, the "conatus" is at the heart of Spinoza's Ethics. And we often translate "conatus" by "effort". But identifying the conatus with effort entails that effort is the tendency (capacity, disposition, power…) of an individual being to persevere in its existence. This is, however, implausible and this doesn't do justice to Spinoza's ethical view. We manifest the power to persist in our existence whenever we exist, including while sleeping. But no one would maintain that we make or feel effort in our sleep. I thus propose a refined interpretation of Spinoza's understanding of effort, which is both plausible and fair to Spinoza's ethical concepts, according to which an effort is an *attempt to increase one's power by performing a given action*. This proposal is compatible with agentivism because it restricts effort to the agentive expression of the conatus. Individuals don't make efforts when they merely persist in their being, that is, when they don't do anything. They only make efforts when they persevere in their being by doing something.

The consequence of this proposal is that an effort is the underlying structure of an action.[35] At the surface level, acting is trying to obtain a certain object, like food for instance.[36] But at the underlying level, acting is really striving, namely, trying to increase one's power. Not only is this view compatible with agentivism, but it is also fair to Spinoza's ethics, for he tried to show how we can move from a non-adequate way of making efforts (by seeking illusory goods, which are inadequate to our nature) to a better way of making efforts (by seeking actual goods, which are adequate to our nature). That is, Spinoza shows which actions must be performed to succeed in the (necessary underlying) effort to persevere in one's being. I begin with an explanation of what conatus means. Firstly, (5.1.1.) the theoretical function of the conatus is to bring a positive definition of individual beings. Secondly, (5.1.2.) the positive content of this definition of individuals is that an individual, if it is a human being at least, tends to seek to increase her mental and physical capacities. I then propose an interpretation of Spinoza's conatus-based view of effort. (5.1.3.) I show that we can distinguish an agentive mode of perseverance from a passive mode of perseverance, and I suggest we reduce effort to the agentive mode of perseverance. (5.1.4.) It leads to the idea that we strive whenever we act, for the underlying goal of

[35] I will distinguish the agentive sense of action, which I introduced earlier, from Spinoza's normative concept of action. In the descriptive agentive sense, acting just is for an individual to teleologically cause some changes: raising her hand, pronouncing words, making inferences and deductions, trying to change her life. I will show that this basic sense of agency is compatible with Spinoza's views. Indeed, there is a sense in which individuals do things, for they try to obtain (real or illusory) goods, such as in seeking glory, wealth or pleasure. I

[36] I stick to "individual" instead of "agent" to fit better with Spinoza's ontology, but you can replace it by "agent" to make the whole chapter more intuitive.

our action ("understanding effort") is to persevere in our being ("developing my intellectual abilities"). (5.1.5.) In a last time, I explain how this proposal remains faithful to Spinoza while being relatively plausible.

3.1.1. A Principle of Individuation

The conatus plays a primary role in the architecture of Spinoza's metaphysics, which I will briefly explain. Spinoza wrote in Latin. The term that he used which is usually translated by "effort" or "endeavour" is the word "conatus". Conatus is the nominal form of the verb "conor", which can itself be translated as "to endeavour to", "to make an effort". According to Spinoza, "conatus" refers to the essence of individual beings. The conatus, the essence of individuals thereof, is itself defined as the power, for an individual, to persist (or to persevere) in its being.[37] For Spinoza, "individuals" refer to ordinary objects such as human beings, minds, non-human animals, artifacts, stones, etc. –a complexion I shall ignore.[38] Spinoza's concept of conatus is, on closer scrutiny, the conjunction of the three following claims:

> Essence: the conatus is the essence of individuals, that is, a power to persist in one's being.
>
> Intrinsic unlimitedness: An individual's power to persist in its being is internally unlimited: an individual, if not corrupted by external factors, will persist indefinitely in its existence.
>
> Extrinsic limitedness: An individual's power to persist in its being is externally limited: an individual will resist to external causes of corruption and destruction, but its power to do so is limited.

[37] Spinoza's account of effort is introduced through the propositions 6-10, in the third part of the Ethics. The English text used for the references is based on the translation by R. H. M. Elwes (Spinoza, 2009).

[38] See LeBuffe (2022, 1.2.)

I) The Conceptual Role of the Conatus in Spinoza's Metaphysics

The reason why Spinoza defines individuals in terms of conatus is to be found in his metaphysics. He draws an ontological distinction between reality, which is the totality of what there is, and which he calls the Substance, from individuals, which are local and finite modifications of reality, and which he calls "modes of the Substance". The essence of reality is to be powerful.[39] This proposition means that reality necessarily is (its essence entails its existence) and necessarily causes effects, that is, causes into existence all things and events that can possibly exist (reality and possibility overlap). Individuals are local portions of reality which "express" its essence, meaning that they exist and cause effects.[40] Existing individuals also struggle with each-other as the existence and actions of some exclude the existence and actions of others, and vice-versa. Reality thus presents an infinite succession of causally related events involving individuals struggling between themselves not to be destroyed.

In this general picture, the conatus is one of the two Spinozist ways to define individuals. First, they can be determined negatively by their limitation. An individual is *that* which is not everything else, for by definition it is a local and finite modification of reality. But they can also be positively defined by the common essence that they share, which is itself defined through the concept of conatus. Individuals have a common essence, and their essence is to be conatus. Spinoza's definition of conatus is therefore Spinoza's definition of individuals: "The endeavour, wherewith everything endeavours to persist in its own being, is nothing else but the actual essence of the thing in question" (Spinoza, 2009, III, 7).

This concept is in fact the intellectual result of a mixture between Spinoza's concept of power and Spinoza's concept of limitedness. More precisely, the idea of conatus results from the attribution of the property of limitedness to power. When the concept of "power" is unqualified, it refers to the fact that the Substance (reality) essentially exists and necessarily causes effects. But when "power" is qualified by some property of limitedness, it refers to individuals.

Individuals are limited portions of reality that express the essence of reality. They *express* the essence of reality in the sense that they are local and finite ways for reality to manifest its essence. Since the essence of reality is to be powerful, that is, to exist and to cause changes, individual things are nothing but finite pieces of reality, that is, finite powers to exist and cause changes. While reality is the totality of what there is and the totality of power, individuals are finite "pieces" of reality and, consequently, limited "pieces" of power, as their power is limited by the power of all the other things. While any individual is essentially characterized by the fact that it is a conatus to persist in its being, the

[39] See I, 34: "God's power is his essence itself", (Spinoza, 2009).
[40] See I, 36: "There is no cause from whose nature some effect does not follow", (Spinoza, 2009).

Substance is not characterized in terms of conatus. The conatus is the essence of individuals, not of Reality. Reality has an essence, but it is to be perfect and entirely powerful, not to be a conatus.

Conatus is therefore a concept used to define individuals that exist and cause changes, as they express the essence of reality, but which, at the same time and because they are individuals, are limited in their power to exist and to cause changes. The concept of conatus captures the limitedness of power, which results from the attribution of power, the capacity to exist and cause changes, which is the essence of reality, to individuals, which are finite portions of reality.

II) The Internal and External Characterizations of the Conatus

A conatus just is a limited power, that is, the essence or real definition of an individual. The limitedness of individuals' power, however, is only extrinsic. A conatus is the limited power with which an individual stays into existence. But if it is limited in one essential sense, it is also unlimited in one important other sense. It is limited *extrinsically* but it is unlimited (or indefinite) *intrinsically*. The claim that the conatus is intrinsically unlimited means that an individual, if not corrupted by external factors, will persist indefinitely in its existence. This is due to the fact that Spinoza believed that there cannot be any internal principle of negativity, meaning that an individual cannot corrupt or destroy itself.

Conversely, it means that any corrupting event happening to an individual must be external. That is, any negative event happening to an individual must be the effect of the action of other individuals. Spinoza in fact operates a metaphysical reading of a concept that is primarily applied to physical entities. The concept of conatus might indeed initially refer to Descartes' formulation of Newton's first law of movement (Gillot, 2004): "The first law of nature: each thing when left to itself continues in the same state; so any moving body goes on moving until something stops it […] The first of these laws [of nature] is that each simple and undivided thing when left to itself always remains in the same state, never changing except from external causes" (Descartes, 1988, p. 37).

Such as a moving object persists in its movement if no external force is applied on it; likewise, any existing individual persists in its existence and stays the same if no external factors intervene. And just like the momentum of objects, likewise the conatus is in itself indefinite: "The endeavour, whereby a thing endeavours to persist in its own being, involves no finite time, but an indefinite time" (Spinoza, 2009, III, 8). That is, in the absence of external effects, an individual would eternally persist into its existence. Of course, individuals do not empirically eternally persist in their being, but this is only because they are subject to negative, corrupting or destroying events resulting from the actions of external individuals. For "Nothing can be destroyed, except by a cause external to itself" (Spinoza, 2009, III, 4).

But the power of individuals is limited *extrinsically*, that is, in comparison to the power of other individuals. It is limited extrinsically in the sense that an individual cannot eternally resist to the corrupting effect of other individuals; but it is not limited internally in the sense that the cause of its destruction could be internal to it. An individual is bound to sadness, error, corruption and to cease to exist, only because it cannot avoid relations with other individuals whose cumulative power of corruption is infinitely superior to its power to resist them. The extrinsic character of an individual's limited power to persist is in fact linked to Spinoza's account of finitude. Our finitude is explained by the fact that our power to persist, although eternal in itself, is ridiculously small in comparison to the cumulative power of all the other individuals that can harm us physically, by corrupting our body, and mentally, by corrupting our mind, that is, by generating incomplete and mutilated ideas.

The Conatus: the conatus is, for an individual, the intrinsically unlimited and extrinsically limited power to persist into its being, which is its essence.

3.1.2. Perseverance in One's Being

To recapitulate, the conatus in Spinoza's view refers to the power of individuals, which is their essence. The conatus is characterised internally as an unlimited power to persist in one's existence. This internal characterisation of the conatus as an indefinite principle of persistence follows Spinoza's metaphysical extension of the principle of inertia. Just like a physical object in motion will persist in its motion unless another force is applied to it, likewise an individual will, in absence of external causal influence, persist indefinitely in its existence. But the conatus is also characterised externally by its limitedness. An individual cannot self-destroy but it will fatally be corrupted and destroyed by the actions of other individuals. But, as much as it can, it will resist to such corrupting actions.

I) Joy and Sadness

Now, what does it mean positively for individual beings like us? What is it, concretely, to be a conatus? When it comes to human beings, "being a power to persist" takes the form of a tendency to develop one's mental and physical capacities. Human beings try to increase their capacities, whether it is a capacity perceived from a bodily perspective (the capacity to be healthy, for instance) or a capacity

seen from a mental perspective (the capacity to think rationally, for instance).[41] They try, in other words, to develop their conatus, for the conatus refers to the set of capacities of a given individual. The conatus, in other words, seeks its own growth. But one's power to persist in one's existence is almost constantly varying. For instance, it decreases if the individual gets sick, melancholic or suicidal; it increases if the individual gets healthier, more knowledgeable or caring towards others. An increase of one's general set of capacities (or conatus) is experienced as joy; a decrease of one's conatus comes as sadness.

"[…] the mind can undergo many changes, and can pass sometimes to a state of greater perfection, sometimes to a state of lesser perfection. These passive states of transition explain to us the emotions of pleasure and pain [joy and sadness]. By pleasure therefore in the following propositions I shall signify a passive state wherein the mind passes to a greater perfection. By pain I shall signify a passive state wherein the mind passes to a lesser perfection. Further, the emotion of pleasure in reference to the body and mind together I shall call stimulation (titillatio) or merriment (hilaritas), the emotion of pain in the same relation I shall call suffering or melancholy" (Spinoza, 2009, III, 11, scolie).

Joy: an increase of one's conatus, that is, of one's general capacity to persist in one's being.

Sadness: a decrease of one's conatus, that is, of one's general capacity to persist in one's being.

II) Merely Persisting and Persevering

One comment might be in order. The idea that we (human beings) try to increase our power may raise a difficulty with respect to Spinoza continuous ontology. Contrary to Descartes, Spinoza conceives reality in an entirely unified way. There is no distinction between God and his creation; neither is there any ontological distinction between human beings and other individuals, as Spinoza claims that human beings are not different in nature from other individuals (Spinoza, 2009, I). The only difference is that their body, and consequently their mind, for mind is the perception of the body, is more complex (Spinoza, 2009, II, 13 & 14). But apart from this difference in complexity, human beings and other individuals are both defined as conatus.

But now, it is unclear whether Spinoza applies the same analysis to human beings and other individuals. Spinoza's psychological theory seems to introduce a distinction between two sorts of

[41] One can also speak of mental and physical capacities, which is easier, but which also goes against Spinoza's declared monism.

individuals. On the one hand, individuals in general are defined as a power to persist in their being in a merely conservative way, that is, into conserving or preserving themselves. For instance, a stone merely persists into its being, in the sense that its momentum stays equal in absence of external constraints. But on the other hand, human individuals specifically seem to be defined as a power to persist in their being in an expansive way, that is, into increasing themselves. Human beings are indeed pictured as beings who try to increase their knowledge, power, joy and activity[42]. One possibility is that there are just two ways for an individual to be a power to persist: a conservative way for non-human individuals, and an expansive way, for human individuals. Both are powers to persist in their existence, but while the former persist into the conservation of their being; the latter persist into the expansion of their being. Another solution, which preserves Spinoza's psychology and ontology, is to admit that even non-human individuals persist in an expansive way, or that both non-human and human individuals persist either expansively or conservatively.

I shall restrict myself to the discussion of human beings and assume that they do not merely try to preserve their conatus, but also to increase it. For that reason, I should also prefer the expression "trying to persevere in one's being" to the expression "trying to persist in one's being", for *persevering* better denotes the idea of seeking an increase of one's capacities.

III) Effort and the Conatus

Identifying effort with the conatus entails that an effort is, for the individual, the tendency to persevere in its being. Such a tendency is, if we follow Spinoza, consubstantial to the existence of the individual, for it is her actual essence. But it is unclear whether anyone would maintain that an effort is a tendency or disposition, especially such a fundamental one. Is there room within Spinoza's philosophy for a manifestation-based view of effort? I believe there is one, if we identity effort with, and restrict it to, the agentive manifestations of the conatus. On this interpretation, an effort is *an attempt to persevere in one's being by acting*. There are two main claims in this interpretative proposal. The first claim is that we must distinguish agentive from non-agentive modes of perseverance: one can increase one's powers through one's actions; but one's power can also be increased by external situations that one isn't

[42] This specificity of human beings chiefly appears in the idea that human beings always try to be *more* active, as the term *persevering* and as Spinoza's ethics suggest. On the contrary, non-human individuals do not seem to seek to increase their joy and power. Another clue of the fact that there might be a difference of nature, and not only of degree between human beings and other individuals, is that different rules of conduct apply to them (Spinoza, 2009, IV, 35).

responsible for. The second claim is that effort refers only to the agentive manifestations of the conatus. It entails that effort is the underlying attempt beneath every action: just like one can say that trying to be happier is what we really do when we act, likewise the conatus-based view of effort says that what we really do whenever we act is striving to increase our power. The justification for the distinction of these two layers of agency is that while an action can succeed; the effort underneath may fail. This proposal is more intuitive and plausible, but it is also faithful to the spirit of Spinoza's ethics. Let me take these points step by step.

3.1.3. Effort as Agentive Perseverance

I propose to reduce effort to the agentive mode of the conatus. To begin with, let me justify the distinction between the passive and actives modes of the conatus. The essence of human existence is the tendency to increase one's conatus, to develop one's capacities, to "persevere in one's being". Its increase causes joy; its decrease causes sadness. But both joy and sadness (increase or decrease of one's conatus) have two types of causes. Namely, there are agentive and passive causes of joy and sadness. First, let me distinguish agentive from passive causes of joy and sadness. Second, I will justify the use of the notion of agency in regard to Spinoza's metaphysics.

I) Agentive and Passive Modifications of the Conatus

What increases our power brings joy; what decreases our power brings sadness. But the cause of both joy and sadness can be either agentive or passive. When I meet my friend on the street by chance, this gives me joy, but my action (wandering) is not the cause of it; the situation is. When I learn some bad news because I overheard some conversation in the telly, this causes sadness, but I'm not the cause of it: "Anything can, accidentally, be the cause of pleasure, pain, or desire" (Spinoza, 2009, III, 25). On the other hand, if I decide and eat good food, it is what I do that causes joy; symmetrically, it is my action that brings sadness if I decide to eat too much junk food. So, actions are not the exclusive cause of joy and sadness, that is, of the increase or decrease of my power. The conatus-based view of effort makes more sense if we restrict efforts to the individual's actions: efforts are the attempts that we make to increase our conatus; but non-agentive increase or decrease of our conatus are not efforts.

II) The Two Concepts of Action in Spinoza

One could reply that it is anachronistic to use the concept of agency, introduced earlier, to analyse Spinoza's views. It is true that Spinoza defines actions in a different way. But that doesn't mean the basic sense of agency is missing from his writings. The notion of agency that I use is the one I introduced earlier. The relevant mode of agency here is intentional agency. Intentional actions are manifestation of the active powers of an individual in order to reach some goal, of which the agent has some representation. Spinoza gives a distinct and evaluative meaning to action. According to Spinoza, an individual is active only if it causes an effect of which it is the *adequate* cause. The same action (in the agentive sense) can be either active or passive for Spinoza.

For instance, I am active if I help a friend as a result of my representation of the eternal nature of human relations and not as a result of my expectation that this friend will help me back later. The same act (helping my friend) can be active (if I do it for "a good reason", that is, in adequation to my nature) but also passive (if I do it for "a bad reason", that is, not in adequation to my nature). One can act in the agentive sense and be passive in this Spinozist evaluative sense. The nazi committing crimes is active in the sense that she *does* something, such as paperwork that is essential to the unfolding of the final solution, but she is passive in the sense that she is not an adequate cause, for she does act in accordance with her nature. Conversely, one can be active in Spinoza's evaluative sense although one doesn't act in the agentive sense. The philosopher contemplating the eternal essence of God may not be doing anything agentively (she merely has a representation; she experiences an idea) but she is active because it is adequate to one's nature to contemplate the eternal essence of reality. Spinoza explains this point as follows:

"I say that we act when anything takes place, either within us or externally to us, whereof we are the adequate cause; that is (by the foregoing definition) when through our nature something takes place within us or externally to us, which can through our nature alone be clearly and distinctly understood. On the other hand, I say that we are passive as regards something when that something takes place within us, or follows from our nature externally, we being only the partial cause" (Spinoza, 2009, III, second definition).

III) Agentive Action in the Ethics

The agentive notion of action that I use here is, thus, distinct from Spinoza's evaluative notion of action. By action, I refer to the fact that a given individual does something, in the sense that it is causally responsible for the production, causation or bringing about of an effect. The criminal who kills someone

does something, she causes a result which is the death of someone. She is not active in Spinoza's sense, but she is active in the sense that I use. Now, is this agentive sense of action compatible with Spinoza's views? It seems to be, for Spinoza also resorts to it. After all, this sense of agency is really basic, and we may not be able to do without. The idea of trying to bring about effects, the idea of doing, is indeed present. For instance, it appears during the following propositions:

> "We endeavour *to bring about* whatsoever we conceive to conduce to pleasure; but we endeavour to remove or destroy whatsoever we conceive to be truly repugnant thereto, or to conduce to pain […] We shall also endeavour *to do* whatsoever we conceive men to regard with pleasure, and contrariwise we shall shrink from doing that which we conceive men to shrink from"(Spinoza, 2009, III, 28 and 29, my emphasis).

These propositions show that Spinoza does assume that we can act in the sense of causing effects. Besides, they also show that he assumes that we can act in order to reach a goal, although he would maintain that we are determined to try to reach such or such goal, since he refuses final causation. So, we can feel entitled to speak of "action" in the agentive sense, for Spinoza presupposes it, as long as we trust the fact that endeavouring "to bring something about" or that "to do" something are safe indicators of the agentive sense of action. Now that this clarification is made, let me show why we should understand effort as the underlying structure of any action (in the agentive sense).

3.1.4. Effort as the Substance of Action

Spinoza offers the possibility to describe every intentional action at two different levels. These two levels do not only differ in their description, but also in their being. On the one hand, there is the surface, objectual level. It refers to the attempt by the agent to obtain some good. On the other hand, there is the underlying, structural, power-constituted level. It refers to the attempt by the agent to increase her capacities during her action. Effort is what we really do just like we can say, in modern fashion, that the underlying goal of any action is happiness; or just like Marx would distinguish the appearing level of ideology and discourses from the underlying level of the means and relations of productions. We need to distinguish the two levels because while an action can succeed (the individual obtains the food she was seeking), the effort may fail (it was some junk food, which diminishes the individual's physical power). Any action has an objectual level (the attempt to obtain some good) and a metaphysical level

(the attempt to hereby develop one's capacities). The metaphysical level is effort: an effort is the attempt to increase one's power –the attempt to "persevere in one's being".

The criterion of the distinction between the appearing objectual level of agency and its underlying metaphysical structure is that they have different success conditions. The action can succeed at the apparent level, while it fails at the more important, underlying level. We clearly see it when we look at the way Spinoza speaks of ordinary human agency. Human beings act in many different ways, but they always seek what they believe to be good for them. According to Spinoza, we mostly tend to seek three types of things: sensual pleasure, richness and glory. But in so doing, we do not necessarily produce our own good. Indeed, Spinoza argue that acting in order to obtain such goods leads one to sadness, extended anxiety and situations of dependency, as he explains in the very beginning of his "On the Improvement of Understanding":

> "[…] the ordinary surroundings of life which are esteemed by men (as their actions testify) to be the highest good, may be classed under the three heads —Riches, Fame, and the Pleasures of Sense: with these three the mind is so absorbed that it has little power to reflect on any different good. By sensual pleasure the mind is enthralled to the extent of quiescence, as if the supreme good were actually attained, so that it is quite incapable of thinking of any other object; when such pleasure has been gratified it is followed by extreme melancholy, whereby the mind, though not enthralled, is disturbed and dulled. The pursuit of honors and riches is likewise very absorbing, especially if such objects be sought simply for their own sake, inasmuch as they are then supposed to constitute the highest good. In the case of fame the mind is still more absorbed, for fame is conceived as always good for its own sake, and as the ultimate end to which all actions are directed. […] When I saw that all these ordinary objects of desire would be obstacles in the way of a search for something different and new — nay, that they were so opposed thereto, that either they or it would have to be abandoned, I was forced to inquire which would prove the most useful to me" (Spinoza, 1958).

What this passage indicates is that Spinoza holds a view of human beings according to which they necessarily seek to increase their conatus. That is, by essence, a human being will try to obtain what increases her physical and mental capacities. But human beings are usually mistaken concerning the nature of the objects and situations that they should seek in order to genuinely increase their conatus. In other words, one can succeed in a particular action (obtaining sexual satisfaction, for instance) while failing with respect to her underlying goal of increasing her conatus. To use a perhaps more intuitive example, one can succeed to find and consume drugs, but in so doing one can fail to increase one's

conatus, for drugs tend to lessen one's physical and mental capacities. Hence his writing the Ethics, to explain why the usual objects that we seek through our actions are in fact detrimental to us.

This justifies, or so it is my proposal, that we distinguish two levels for every action that we perform. There is what we might call the surface level, referring to what the individual does. The surface level refers, for instance, to the action of buying and consuming drug, junk food or infotainment. But there is also the underlying level, referring to what the action does to the individual's conatus, that is, to the individual's physical and intellectual powers. Some actions decrease one's conatus, causing the individual to be sad; some actions increase one's conatus, causing the individual to experience joy.

3.1.5. The Conatus-Based View of Effort (*1st agentivist definition*)

An action is an attempt to get a certain object, to bring about a particular state of affairs; an effort is what we necessarily and really try to do through the action, on the occasion of the action, with respect to our being, that is, with respect to our capacities. An effort is an attempt to increase one's power, actions are the necessary means to, or occasions of, efforts. Actions tells the story of what happens with objects in the world: we find such or such objects, we bring about such or such state of affairs. Effort tells the story of what happens to our substantive being when we act: we increase our power, or we decrease it.

(i) The Conatus-Based View of Effort: an effort is, for an agent, the attempt to increase her power (to "persevere in her being"), which is the underlying attempt behind her apparent action.

- Making an effort is, for the agent, to try to increase one's power.

This conatus-based view of effort has two benefits. First, it is compatible with agentivism. Therefore, it is more plausible than the idea that effort would just be a tendency or disposition. Second, it fits nicely with the general spirit of Spinoza's Ethics. For in this book after all, he explains how to act better, so that we successfully persevere in our being. It is because there is a difference between the action-level and the effort-level, that Spinoza must identify the things with which we should seek relations and those with which we should avoid contact. In order to live better, we should understand which things are adequate to our nature; therefore, we must understand what our nature is.

Spinoza's solution is that we should seek to understand the eternal essence of things and determine our behaviour after them. For instance, an agent is active and free if a given piece of behaviour (for

instance, helping a friend) is causally determined by her representation of the eternal essence of social relations; but it is constrained and passive if this same piece of behaviour is causally determined by the representation of a temporal and finite event, such as his hope that his friend will help her later, or the feeling that she owes her friend for something she did (Alain, 1986). Note that it is possible to accept the structure of Spinoza evaluative account of activity (I'm active if the cause of my behaviour is adequate to my nature) without accepting his account of the human nature.

3.2. Effort as Depletion

Introduction. Spinoza offers a historically important, conatus-based, approach to effort. But one may contend that this definition is really meaningful, or that it is what Spinoza really meant. I acknowledge the difficulty of interpreting Spinoza and the peculiarity of his proposal as I have framed it. That being said, his proposal may not be that peculiar after all, at least to some extent. Indeed, the conatus-based view requires to conceive effort as *a certain way to look at actions*. Namely, it suggests that thinking about effort is looking at actions from the perspective of their effects on the agent's powers. The investment-based view of effort does something similarly: it associates effort with what happens to an agent's resources when she acts. Now, Spinoza's notion of power and the usual notion of resources differ in important respects, but there is some functional equivalence in the two theoretical gestures. At the very least, it seems to me that there is enough proximity to treat them both during the same chapter. That being said, what is this investment-based view that turns the focus on the depleting aspect of agency?

(3.2.1.) The investment-based view is the formal view that an effort is the goal-directed investment of limited resources. Now, a clarification is in order. The way we speak about effort often suggests that effort just is a resource or the fuel for action. But what we really mean is rather that an effort is the investment of some limited resources during an action. The concept of effort offers a particular way of denoting action, that pays attention to the depleting, costly aspect of agency. Now, the investment-based view, because it is a formal view, is compatible with several substantial versions. (3.3.2.). I will give two examples. First, there is the Motivational Intensity Theory, which identifies effort with the investment of whatever resources are necessary to behaviour. This view entails that any animal action is an effort. Second, there is the Ego Depletion hypothesis, which suggests that effort is rather the investment of a more specific "ego" resources that seems to be invested only during actions that require some self-control.

3.2.1. The Investment-Based View and its Variations (*2nd definition*)

To begin with, we need to distinguish what I shall call the resource-based view of effort from the investment-base view of effort. The first one conflates *resources* with the *intentional investment of resources*. Intentionally investing resources is intentionally *doing* something, it is acting. But having resources, for an agent, is not yet acting. I propose a metonymical interpretation according to which, first, it is more plausible to identify effort with the investment of resources than some resources itself

and, secondly, I claim that those who treat effort as energy just use the part (energy) for the whole (intentionally investing energy). Hence the "metonymical" interpretation. There is evidence that the resource-based view is *entailed* by what we researchers say about effort. But at the same time, I will also show that most of those researchers in fact waver between the view that effort is resource and the view that effort is the intentional deployment of resources. I will argue that it is more plausible to endorse the latter view, which is the investment-based view of effort.

The resource-based view of effort: effort is some limited (mental or physical) resource

The investment-based view of effort: an effort is the intentional investment of some (mental or physical) resource

As far as we are concerned with categorizing effort, I have no problem with the investment-based view. The investment-based view has two interesting characteristics. First, it correctly identifies effort with an agentive event, for intentionally investing energy or resources is acting.[43] Second, it constitutes a genuine full definition of effort.[44] The problem is that many scientific works waver indiscriminately between the investment-based view and the resource-based view. On the one hand, researchers speak about effort as if it were energy; on the other hand, they rather suggest that effort is the investment of energy. The recurrence of this confusion requires that we deal with it.

The confusion is observable in former works by the defenders of the Motivational Intensity Theory. Indeed, they used "effort mobilization" interchangeably with "resource mobilization" (Gendolla, Wright, and Richter 2012, pp. 420–22). But if effort can be mobilized like a resource, then effort is not the mobilization of resources, for effort would be defined as the mobilization of effort. If effort can be mobilized, then effort is simply a resource. They have since then clarified the view and claim that effort is the mobilization of resources. Speaking of effort as if it was energy seems to be a metonymical confusion. We conflate effort properly speaking, which is the investment of some resource, with the resource that is hereby invested. In a similar vein, some authors also tend to conflate effort, which is an action and therefore the manifestation of some active capacity, with the capacity that is hereby manifested.

[43] I assume that "resource" and "energy" are synonym in this context, at least at this level of generality.

[44] The investment-based view is the name I give to what Massin has called the *resource-based view of effort* that an effort is the intentional investment (depletion, deployment, mobilization…) of some limited resource (Bermúdez & Massin, 2023; Massin, 2017). I prefer the label investment-based view to the label resource-based view because "investment" denotes agency in a way that "resource" does not.

Take the theory of Maine de Biran for instance. For the time being, we can roughly characterize his view by saying that according to Biran, an effort is an agent exercising her will to overcome the resistance of her body. An effort is the exercise of one's will, that is, the exercise of the capacity to move the body even though the body resists its being moved. But Biran doesn't clearly discriminate the capacity to move the body (the will) and the exercise of that capacity (an effort). Indeed, Biran calls "effort" both this very general *capacity* (which is also the capacity to make decisions) and the *exercises* of that capacity. However, we must distinguish these two meanings of "effort" because Biran says that all exercises of effort are exercises of the "same effort" (Biran, 1995, p. 96). But what would this effort be that is always the "same" if not the dispositional capacity of effort that we usually call "the will"? On the one hand, he simply identifies effort with "the will", understood as this free and spiritual capacity to move the body. On the other hand, effort refers to the exercises of that faculty, which are actions. Here also, we find a metonymical confusion between effort as a capacity (the spiritual capacity to make decisions and move the body) and effort as an action (the exercises of said capacity).

Thus, there is a tendency to conflate the investment of resources with the resources invested. But there is also a similar tendency to conflate the view that effort is the exercise of some capacity (id est, an action we do, the exercise of our will) with the view that effort is the capacity hereby exerted (the will). Now that the confusion has been spotted, we need to make a decision. There are two reasons to favor the agentivist view over the resource, capacity-based view. The first reason is that all the authors who waver between these two views *do waver* between them. That is, they do not explicitly and wholeheartedly defend the resource-based view. We can simply assume that the tendency to equate effort with energy just is the result of a metonymical use of "effort".

The second reason is that most theories wavering between these two views would be less informative if we kept going with the energetic meaning. For instance, the Motivational Intensity Theory is explicitly presented by its proponents as an informative and predictive theory about effort. But it would not be particularly informative and predictive if effort was merely a resource because there is no account of the nature of the resource at stake. If, on the contrary, effort is equated with "the instrumental mobilization of resource," then the Motivational Intensity Theory can legitimately claim to be an informative and predictive theory. There are therefore good reasons to maintain that the resource-based view of effort does not raise a fundamental objection to agentivism, but the frequency of the confusion required that we clarified it. The Investment-based view can be expressed as follows, in both verbal and nominal forms:

(ii) The Investment-based definition: an effort is a *costly action*.

- Making an effort is, for an agent, intentionally investing some limited resources.

3.2.2. Two Illustrations: The Motivational Intensity Theory and Ego Depletion

Let me give two examples of scientific theories using this definition. The investment-based account has received its most detailed development in the context of the Motivational Intensity Theory. The Motivational Intensity Theory ("MIT", Brehm and Self, 1989; Richter and Wright, 2014; Gendolla, 2012; Gendolla, Wright, and Richter, 2012; Brinkmann, Richter, and Gendolla, 2021) defines effort as "the mobilization of resource to carry out behavior" (Gendolla, Wright, and Richter 2012, p. 134). It hypothesizes that effort is reflected by sympathetic cardiovascular adaptations, and predicts that the intensity of an effort is directly determined by the difficulty of the action performed, as long as the agent believes there is a positive cost-benefit ratio to performing it. The Motivational Intensity Theory (MIT) hinges on two principles: a resource-based definition of action, and a resource-preservation principle. The theory does not distinguish action and effort, suggesting that they are identical. That is, it suggests that efforts are actions but also that all actions are efforts. It also suggests that efforts are performed by most animals and not only human animals.

Acting is defined as trying to meet the "demand", or "difficulty", of a task. The demand or difficulty of a task refers to the energetical costs that must be met if that action is to be successfully performed. For instance, one must invest a certain quantity of physiological resources to run a marathon, or a certain quantity of mental resources to perform a Stroop task[45]. Actions can alternatively be defined in terms of the resources they require to invest (action as "task difficulty"), or in terms of the resources that an agent actually invests to meet the task difficulty (action as "energization"). The theory postulates a resource preservation principle. MIT assumes that agents have limited resources, and that the limited nature of their resources entails a principle of conservation. Since resources are limited and essential to survival, they should not be invested in vain. Therefore, the idea is that some mechanism governs the intensity of an agent's behavior, and its function is to ensue optimal resource allocation.

In light of these principles, the theory proposes that a law of utility governs the intensity of animals' effort. As long as an agent sees success as both possible and worthy, the intensity of her effort increases

[45] The Stroop task is an experiment where patients have to read out loud coloured words referring to colours. In congruent trials, the word refers to the colour of its ink (for instance, the word "orange" is written in orange). In incongruent trials, the word-reference and its ink do not match (for instance, the word "blue" is written in red). Subjects take longer to answer during incongruent trials because they need to inhibit the spontaneous tendency to name the colour of the ink (if "blue" is written in red, we are pushed to say "red"). The increased response delay is often interpreted as the sign that some mental control must be deployed, the deployment of which is costly. It suggests that mental control is, or is sustained by, some specialized mental resource (Stroop, 1935).

relatively to the level of the task's difficulty. The more resources she must invest, the more she does as long as she believes it is legitimate and possible to reach the goal. However, if success becomes impossible or unworthy, the intensity of her effort decreases. That is, she gives up. The first part of this law is that, everything else being equal, an agent invests resources proportionally to the difficulty of the task. The more difficult the task, the more resources she mobilizes. That is, the most intense her effort, since effort is the investment of resources. The second part of the law is that an agent only invests resources proportionally to the difficulty of the task if she believes that success is possible and worthy. The complete law is that the teleological mobilization of resources, or effort, increases in proportion to task difficulty, as long as the agent sees success as both possible and worthy. The MIT is, therefore, the view that efforts are instrumental mobilizations of limited resources, and that their intensity is proportional to the difficulty of actions, if the agent believes success is possible and worthy.

If MIT entails that any action is, or takes, an effort, it is not consubstantial with the investment-based definition to claim so. Effort can be restricted to the intentional mobilization of specific resources; specific to only one type of action. For instance, some views construe attention as a resource, and equate effort with the instrumental allocation of top-down attention (Bruya & Tang, 2018; Doughney, 2013; Kahneman, 1973). Arguably, it is not the case that all actions consist of an instrumental allocation of attention. Other theories, favoring the Ego Depletion Model (Baumeister et al., 1998; Vohs and Baumeister, 2017), equate effort with the investment of a special self-control resource – the "ego" – which is also required in the performance of some actions.

3.3. The Law of Least Effort

Many researchers connect effort with the idea of intentionally investing some limited resources. In this context, it is usually admitted that some principle of resource preservation governs resource allocation. This reasoning takes a radical form when we admit that there exists a far-reaching principle of least effort. However, defenders of the principle commit some important confusions. I will first introduce two historical accounts of that principle (3.3.1.). I will then show (3.3.2.) that those who defend this principle waver between the view that effort just is energy, which is compatible with their law but implausible, and the view that efforts are actions that we find aversive, which is plausible but incompatible with the law (5.4.2.).

3.3.1. The Principle of Least Effort

The principle of least effort was first formulated by the French philosopher, Ferrero (1894). According to Ferrero, an agent's mental activity is determined by a principle of energy conservation, which is "the law of least effort". The law he proposes hinges on two principles. First, he presupposes a behaviorist account, according to which mental episodes are reactions to external stimuli. Second, he presupposes that mental episodes rely on an energy expenditure that tends to fade away. In that framework, any actual mental episode is a mental reaction to an external stimulus governed by the law of least effort: the mental episode that actually obtains, among all the possible mental states that a stimulus could have elicited, is the one that required the least energy given the characteristics of the particular agent undergoing this change.

The law of least effort, thus, dictates the association between stimuli and mental states. For instance, Ferrero claims that sailors associate the sky turning black (stimulus) with the expectation of a storm (mental state) because it is the association the forming of which required the least energy, given the sailors' past experiences. Not only mental states but also institutions and theories obey the law. Ferrero believes that Darwin's thinking about the theory of evolution was the least energetic reaction to his observation of the work of animal breeders. Ferrero followingly identifies effort with mental energy. Just as physical energy is the potential to cause changes, mental energy is responsible for the occurrence of any mental event. Qua mental energy, effort sustains purposeful mental actions, but also passive mental episodes, such as the passive formation of the sailors' belief that a storm is coming. "Effort" is the mental resource responsible for mental activity, whether purposeful and voluntary, or automatic and unconscious. Mental activity requires effort (energy), and the mind is such that the expenditure of effort

is necessarily minimized. I will show soon and bellow that defenders of the law of least effort in fact conflate the energy-based view of effort with the aversion-based view of effort, which is the view that an effort is an action the agent is averse to doing.

There are two problems with this theory. First, it tends to genuinely conflate effort with energy. According to Ferrero indeed (1894), an agent's mental activity is determined by a principle of energy conservation, which is "the law of least effort". The mental episode that actually obtains, among all the possible mental states that a stimulus could have elicited, is the one that required the least energy given the characteristics of the particular agent undergoing this change. Secondly and pace the first problem, it wavers between two different definitions. On the one hand, it seems to endorse a very wide investment-based view of effort according to which any physical or mental activity (whether purposive or simply automatic) is an effort. On the other hand, it seems to endorse an aversion-based view of effort, which is the view that making an effort is trying to perform an action that the agent finds aversive to perform.

3.3.2. The Aversion-Based View (*3rd Definition*)

On the one hand, Ferrero endorses the energy-based view of effort. Just as physical energy is the potential to cause changes, he claims that mental energy (effort) is responsible for the occurrence of any mental event. "Effort" is the mental resource responsible for mental activity, whether purposeful and voluntary, or automatic and unconscious. Mental activity requires effort (energy) and the mind is such that the expenditure of effort is necessarily minimized. This view seems, quite ironically, not really economic. For if effort is physical energy (ATP, for instance) or mental energy (attention, perhaps), then why should we use a supplementary (and confusing) concept, namely effort? The tendency to equate effort with the mental or physical energetic intensity of agency is problematic because it seems to motivate that we give up the concept of effort. It doesn't really account for the explanandum, it disintegrates it.

Now on the other hand, Ferrero also equivocates between effort and *hard work*, understood as those actions that agents are motivated not to perform. It is in this respect that he constitutes a tenant of the aversion-based view of effort. Human agents, he remarks, have a tendency to hate hard work, whether it is physical or mental – the latter being identified with voluntary attention – and they tend to avoid such hated actions. Effort can thus also be understood as hard work, which itself is to be understood, by Ferrero, as an action that one desires not, or hate, to perform.

(iii) The Aversion-based definition: an effort is an *aversive action to perform*.

- Making an effort is, for an agent, trying to perform an action she is averse to perform.

Theories of least effort conflate two distinct meanings of effort: effort as energy, sustaining the occurrence of any mental episode, and effort as an action that an agent is averse to doing. It is worth noting that the tension between the energy-based view and the aversion-based definition within the least effort theory raises a problem for the theory. To illustrate, consider Zipf who tried to systematise the principle (Zipf, 1949). On the one hand, he says that we choose to avoid efforts, like we choose not to do something difficult or painful. On the other hand, the principle of least effort also governs "our entire individual and collective behaviour of all sorts, including the behaviour of our language and preconceptions" (Zipf, 1949, p. 12). If the principle governs preconceptions as well as city distributions, then effort must be the energy responsible for any behavior, teleological or not. But if the principle refers to our tendency to choose to avoid performing aversive actions, then effort must be an aversive action. The two definitions are not equivalent.

One obvious way out of this is to join both ideas into one explanatory scheme. According to that scheme, "effort" is what we call an action we are averse to. But the actions we call efforts are often those that consume – or are required to consume – a lot of mental resource. Since we are, *ex hypothesis*, averse to expending a lot of resources, we are averse to performing resource-consuming actions. This picture reconciles the important emphasis on resource in theories of the law of least effort, with the view that effort is a hard and disliked action because it explains the difficult or disliked character of actions by the fact that they require important resource investments. It can obviously receive an evolutionary caution: if we are averse to spending resources, it is because they are, by definition, scarce and important for survival.

But it also threatens the idea that the law of least effort governs any behavior whatsoever; or it at least raises a challenge. If effort is an action we dislike doing, this suggests that it is ultimately the agent who decides whether she will do it or not. But if this is so, it means that the law of least effort is implemented through the conscious decisions of agents, who decide not to do what they are averse to doing. Thus, proponents of an absolute law of least effort have to explain how the law is enforced subpersonnally, since the agent is not always making decisions about what to do, what to think, what to feel, or what to remember. Conscious aversion is possibly a way in which the brain informs us that we should not undertake a given action because it consumes too much resource, and perhaps the brain has other automatic and unconscious ways to enforce the law of least resource. That being said, these theories of the law of least effort have enabled me to introduce the aversive-based definition. A

(potential) effort, on this view, just is an action that the agent finds aversive to perform. An actual effort is the attempt, by an agent, to perform such an action.

3.3.3. Conclusion: Does Effort Merely Denote the Costliness of Agency?

Effort is a concept that we tend not to define, assuming its nature is crystal-clear, although there is evidence that it isn't. During this first chapter (of the three that compose my inquiry into usual conceptions of effort), I have focused on theories connecting effort with certain aspects of our finitude in agency. Spinoza conceives effort as a specific way to look at actions. In this context, effort refers to the underlying structure of agency. The underlying structure of agency refers to the effects of our actions on our capacities, namely, their increase or decrease. The investment-based view proceeds to a similar theoretical move, for it uses the concept of effort to denote the depleting nature of agency. Finally, theories of the least effort simply equate effort with energy, rendering the concept useless, but they also suggest that efforts could be actions that we desire not to perform. The three definitions identified, consequently, are the following ones:

> The Conatus-Based View of Effort: an effort is, for an agent, the attempt to increase her power (to "persevere in her being"), which is the underlying attempt behind her apparent action.
>
> – Making an effort is, for the agent, to try to increase one's power.
>
> The Investment-based definition: an effort is a *costly action*.
>
> – Making an effort is, for an agent, intentionally investing some limited resources.
>
> The Aversion-based definition: an effort is an *aversive action to perform*.
>
> – Making an effort is, for an agent, trying to perform an action she is averse to perform.

Three ideas emerge from this first part of the inquiry. First, the *chaotic* nature of the conceptual space of effort is starting to emerge. Second, there is now evidence that effort can be conceived as *a certain way to look at agency*. We can answer the type-question (are all actions effortful?) positively. Indeed, both the conatus-based view and the unspecified investment-based view entail that all actions are efforts. Effort is not a subset of actions. Rather, effort is certain way to denote actions: effort is merely

a *semantic* specification of action. With Spinoza, effort denotes the difference between what we do at the objectual level, and what it does to our capacities, at the underlying level. With unspecified investment-based views such as the Motivational Intensity Theory, effort denotes the depleting nature of agency: acting is costly, it requires to invest and mobilize finite resources. However, that effort denotes the energetic costliness of agency doesn't mean that effort is energy. Effort is often associated with the concepts of resource and energy and their cognates investment, depletion, mobilization. But it is not because effort is energy. For if it were, parsimony would require that we get rid of it.

Now, the formal investment-based proposal seems too vague. We want to know what the resource invested during an effort is. Is it a physiological, cognitive, psychological, muscular, biological? However, a defender of this view can turn this question to her advantage by making the following reply: the type of resource depends on the species of effort under consideration. For instance, attentional effort would be the investment of attentional resources; while physiological effort would be the investment of some physiological resources such as glucose or ATP. This reply, which intuitively makes sense, also opens a rabbit hole: for if we accept that there are species of effort, how many species should we count? The investment-base view also faces a more serious problem, which is a threshold problem. If we accept that an effort is the intentional investment of x resource (for instance, attention or ATP), then either *any* investment of said resource is an effort, or *some* investments only count as efforts. But this might come as a dilemma: the first option may entail that we overcount effort, the second option may be wanting, because it requires to draw a line that may prove difficult to draw. To conclude, this first chapter opens the following questions: Does the concept of effort merely denote agency? Can there be agency without effort? The views introduced suggests the following replies. First, the concept of effort seems to be a certain way to denote (the energetic costliness or the underlying structure) of agency. Second, it seems to entail that all actions are effortful.

4. Effort and the Body

Introduction. The concept of effort can be used to denote the depleting nature of agency. This formal "finitude-orientated" approach is often indeterminate regarding the type of effort at stake, whether it is physical, physiological, biological, survival… effort or whether it is attentional, cognitive, intellectual, moral… effort. During the next two chapters, I shift gears as I use the intuitive distinction between physical and mental effort as a baseline for carving up the theoretical space. In this fourth chapter, I investigate theories connecting effort with the body. These theories are, or so it seems to me, more intuitive and more determinate compared to the finitude-based views of the previous chapters. They may, however, be too restricted to the effect that they focus solely on physical, bodily effort.[46] That worry put apart, these bodily-effort-centered theories rely on what I shall call the *volitional definition* of effort: an effort is an attempt to move the body.

(4.1.) Hobbes is one of its earliest defenders. He identifies effort with the exercise of the capacity to voluntarily turn the mental representation of a movement of my body into the actual movement of my body. (4.2.) Maine de Biran also resorts to the volitional view of effort and action because he identifies making an effort with making a voluntary attempt to move the body. But he believes that voluntarily moving the body necessarily includes an additional essential property, which is bodily resistance. An effort is a voluntary attempt to move one's body, but such an attempt is essentially an attempt to overcome the inertial resistance of the body.[47] During the last two sections of the chapter, I will shift the focus towards theories of the feeling of bodily effort, namely centralism (4.3.) and peripheralism (4.4.). Both pretheoretically admit that there is a specific feeling (sense) of effort that is both essential and sufficient to the feeling of agency, but they disagree concerning the realizers of this experience.

[46] I will ultimately distinguish "physical effort", which is an ambiguous and somewhat confusing expression, from bodily effort. But during this chapter, I allow myself to waver between the two expressions because, I reckon, we have a good intuitive understanding of what physical effort means, even if this intuitive representation will have to be clarified at the end. To anticipate, I shall propose to distinguish bodily effort, which is roughly the exercise of one's muscular power, from physical effort, which is a bodily effort that, because it is difficult, requires an effort of will. To illustrate, consider the distinction between the action of holding a mug of coffee (which is merely a bodily effort if you are in a relatively good physical shape) as opposed to running a marathon or to holding the mug of coffee for hours (which are bodily efforts that require some effort of will –physical efforts correctly understood).

[47] Biran in fact endorses a dualist and body-orientated version of the *resistance-based definition* of effort, which is the view that making an effort is trying to overcome some resistance. Just like the investment-based view comes in several versions, so does the formal resistance-based view (which is the view I will ultimately defend). I think Biran's view is formally correct: any effort is an attempt to overcome some resistance. But it is substantially dubious because it is unsure whether a spiritual power, the will, can overcome the resistance of a physical power, the body. Now, if there were such dualist efforts, Biran's view would still fall short of capturing all the efforts that we make, or so I will argue: even if we accept Biran's dualist resistance-based view, we cannot accept that it exhausts all the efforts we make.

Centralism claims that it is realized by efferent signals, going from the motor areas of the brain towards the muscles, while peripheralism maintains that it is realized by afferent signals, going from the muscles towards the sensory areas of the brain. Centralism endorses the volitional view of effort; peripheralism entails an exercise-based view according to which making an effort is exercising one's body.

4.1. Hobbes and the Volitional Approach to Bodily Effort

The volitional view of effort conceives effort as a voluntary attempt to move one's body. On the face of it, it is a highly intuitive view. Trained philosophers and scientists may however raise suspicion over the seemingly dualist-entailing consequences of this view, where the mental power of the will deals with the physical power of the body. That being said, this volitional approach to effort doesn't necessarily come in a strict dualist, cartesian fashion. Indeed, we shall consider different occurrences of that view, some of them clearly dualist in Descartes' spirit (such as Biran's), some of them rather materialist and reductionist (like, it seems, Hobbes', centralists' and peripheralists' views). During this first section, I say a few words about the unspecified volitional proposal (6.1.1.) before illustrating it with Hobbes (6.1.2.).

4.1.1. The Volitional View (*4th definition*)

Philosophers who defend a volitional view of effort, like Hobbes and Biran, tend to identify efforts and actions. In their eyes, all efforts are actions, and all actions are efforts. They tend to reduce agency to one particular class of actions, namely those actions where the agent exercises her will so as to move her body. I will call such actions volitions, understood as attempts to move the body. In this context, a volition is an attempt (or a trying, a willing) to move one's body. [48] Trying to move one's body is doing something, it is an action performed by the agent, because it is the intentional exercise of an active capacity (namely the will). Those who endorse the volitional view of effort simply identify efforts with volitions: making an effort is willing to move one's body; it is exercising one's will in order to move the body (usually, in order to do yet something else such as shaking someone's hand). Making an effort is exercising one's will in a bodily-orientated way; an effort is an action whose goal is to move the body. The agent makes an effort by exercising her power to try to move her body, in order for her body to move.

(iv) The Volitional definition: an effort is a *volitional action.*

- Making an effort is, for an agent, trying to move her body.

[48] On a vocabulary note, I assume that "willing to move" and "trying to move" are synonymous in this context.

I) "Naked Tryings"

A few remarks are in order. First, "attempting to move one's body" does not necessarily entail that the body actually moves in the way intended. On this view, the goal of an effort is to make the body move, but the effort can fail to make the body move. Indeed, in so-called cases of naked tryings, the attempt to move one's body might fail to cause anything, like in trying to lift a paralyzed arm. But if the volitional theory admits genuine cases of naked tryings, volitions that don't cause anything, then it would include some cases of efforts that are not actions. Indeed, the claim that a volition is an action is often disputed because, precisely, some volitionists admit that one can exercise one's will without causing anything. But this is incompatible with the effective nature of agency, as I have explained it during the third chapter on agency. I shall overlook this complexion, which is a problem for the volitional theories of effort and action.

A volitional definition of effort, if it wants to remain an agentivist theory, has two options. First, it can refuse that there are genuine naked tryings and maintain that exercising one's will in a body-orientated way necessarily produces something. Second, it can accept that there are genuine cases of naked tryings but refuse that they are authentic efforts and actions. Both options have however some theoretical costs, to the effect that many volitionists about effort or action see naked tryings as evidence for their view. I think that the correct analysis of naked tryings is disjunctive. On the one hand, the sense of effort we have, when we try to lift a paralyzed limb, can be due to the fact that we contract other muscles than the paralyzed ones, in which case our volition does cause something (this is William James' analysis, which I'll discuss on the 6.4. section about peripheralism). On the other hand, trying to move a paralyzed limb can rapidly become boring since it is impossible. Followingly, we may grow tired of trying –in which case, if we keep trying, we may have a sense of mental effort.

II) Movement, Effort and Action

The second remark is that if an effort succeeds and that the body moves, it does not necessarily entail moving the body in an observable way for a third-person observer. One can move the body internally so to speak, if one merely contracts one's muscles for instance. "Moving the body" is, thus, equivalent to contracting the muscles. The third remark is that some thinkers use the volitional theory of effort as an explanans for action.

That is, they take it as primitive and use it to define action, as in Descartes' thinking, according to whom, "we equate action with the effort we expend in moving our limbs and moving other bodies by the use of our limbs" (Descartes, 1988, II, 26, pp. 29-30). Fourth, the volitional definition comes in several

fashions, three of which I will study in this chapter: a bare version, which I'll illustrate with Hobbes; a resistance-based version, which I'll illustrate with Biran; and a feeling-based version, which I'll illustrate with centralism. The centralist theory of the feeling of effort seems to hold a supplementary claim, which is that an effort is necessarily felt. Biran holds a supplementary claim, which is that the body necessarily resists its being moved by the will.

4.1.2. The Hobbesian Illustration

Let's illustrate the spirit of the volitional view with Hobbes. Hobbes does not use the word "effort"; he uses the word "endeavour", which is generally understood as synonymous with effort. The Oxford Learner's Dictionary defines "endeavour" as "an attempt to do something, especially something new or difficult," and "effort" as "an attempt to do something especially when it is difficult to do." The Cambridge Dictionary equivocates, comparing "endeavouring" to "attempting" and "striving", and defines effort as the "physical or mental activity needed to achieve something, or an attempt to do something."

Hobbes introduces effort as a concept with a specific explanatory function. Its conceptual role is to operate the intuitive distinction between two sorts of movements. On the one hand are vital motions, which are instinctive and automatic, such as blood flow, breathing, and excretion. On the other hand, there are voluntary motions such as speaking and walking. The difference between the two is effort: voluntary movements, in contrast to automatic ones, are necessarily preceded by an effort. The conceptual role of effort is thus to be a distinctive criterion of voluntary movement. More precisely, effort is the distinctive criterion of voluntary movement in relation to something else. A voluntary movement must also be preceded by the "imagination"; that is, the mental representation of the movement.

The most probable interpretation is that a voluntary movement consists of a threefold sequence. First, the agent forms, or has the representation of, a movement; second, she makes an effort; third, the bodily movement ensues if the circumstances allow it. Effort transfers voluntariness. It inherits voluntariness from its cause (the will) and it transfers voluntariness to its effect (the bodily effect, if any). Effort can thus be said to be the voluntary attempt (inherited voluntariness) to cause a voluntary movement (transferred voluntariness). Judging from its conceptual role and from its position in the causal chain of action, it is fair to conclude that effort is what translates the representation of a movement into its effective realization. Effort is what we do to translate a will or representation of an intended movement into actual movement. Effort is, indeed, defined as these internal movements

initiating, in the right conditions, overt movements:[49] "These small beginnings of motion within the body of man, before they appear in walking, speaking, striking, and other visible actions, are commonly called endeavour" (Hobbes, 1999, p. 32).

The volitional picture of effort raises two questions. First, is an effort necessarily followed by the movement it aims at producing (are efforts essentially productive)? Second, does effort stop once the movement begins, or is it continuously sustaining the movement as it unfolds? According to Hobbes and to centralists, efforts are not essentially productive. In the context of centralism, we shall see that it is related to their admission of naked tryings, attempts to move the body which do not yield any effects, that is, any movement of the body. This is correlated to their argument that efferences are both necessary and sufficient for the feeling of effort. To have a feeling of effort, one has and just has to try to move the body, to contract the muscles. Even if the body doesn't move for some reasons (psychophysical failure, paralysis, bad demons), the agent will still have a feeling of effort. Even if she can't contract her muscles, it is enough to try to contract them to have a feeling of effort.

In the context of Hobbes, we can see why efforts are not necessarily productive by paying attention to the fact that efforts have two possible dynamics. Some of the "internal movements" cause the agent to move to obtain an external object, in which case, effort is called desire. Some efforts cause the agent to move or omit to move to avoid an external object, in which case, effort is called aversion. "This endeavour, when it is toward something which causes it, is called appetite […] when the endeavour is from ward something, it is generally called aversion" (Hobbes, 1999, p. 32).

Consequently, it is possible for an effort to not produce an effect. An effort produces an overt action only if it is not followed by an opposite effort. If a desire is followed by a sufficiently strong aversion, or vice-versa, no overt action is generated until a sufficiently strong desire or aversion puts a closure to this alternance of desires and aversions that Hobbes identifies with deliberation. Efforts are not essentially productive, but they are initiations of movement that may not be followed by movements: they are "willings", "volitions", "attempts to move". With respect to the second question, it seems that a productive effort stops once the external movement starts; Hobbes describes the temporal thickness of efforts in terms of "beginnings".

The volitional theory of effort is sometimes accompanied by the claim that efforts are necessarily felt. This claim seems implicit in the centralist theory that I'll soon discuss below. They argue that the feeling of effort is the feeling of efferences, but never do they consider the possibility of unfelt

[49] Hobbes speaks of movements that are visible ("appear"). It could suggest that the movements produced by efforts are overt movements observable from a third-person perspective. But we can also imagine that an effort can produce a (non-visible) bodily activation, such as the slight contraction of some muscle.

efferences. When it comes to Hobbes, it is clear that efforts can be felt but it is undetermined whether they must be felt. The agent, understood as a conscious perceiver, *can* experience her effort. The content of that experience is as of some force moving from one's body towards the external world. It is the physiology of effort that explains why efforts are experienced as being directed outwards, from the body to the world. As Hobbes says, "the cause of sense is the external body, or object, which presseth the organ proper to each sense, either immediately, as in the taste and touch; or mediately, as in seeing, hearing, and smelling: which pressure, by the mediation of nerves and other strings and membranes of the body, continued inwards to the brain and heart, causeth there a resistance, or counter-pressure, or endeavour of the heart to deliver itself: which endeavour, because outward, seemeth to be some matter without" (Hobbes, 1999, p. 9). Making an effort is trying to move the body, to contract the muscles. Bodily movements and muscular contractions are the telos of our efforts. They are what efforts aim at; they may not be reached thereof.

4.2. Biran and the Resistance-Based Approach to Bodily Effort

Hobbes offers an early volitionist view of effort. Many people might have this volitionist view in mind when they think about effort. Indeed, it seems plausible to believe that voluntarily trying to move one's body can be (or can take) an effort. That said, I suspect that the intuitive appeal of the volitionist view, if any, may be better captured by Biran's theory. According to Biran, it is true that an effort is an attempt to voluntarily move one's body. But this description is wanting, for it misses the fundamental property of such attempts, which is bodily resistance. Making an effort is doing something, which is trying to move the body. But the crucial part of that story, is that the body resists the will.

Maine de Biran's views on effort deserve to be studied, first because he may capture some important ideas about effort (the idea of the connection between effort and some resistance); second because he puts effort at the centre of his philosophy. He adopts an empiricist view, according to which, the fundamental claims of knowledge – the most fundamental one being that there are causal relations – should be grounded in accessible experiences. Previous attempts to ground knowledge failed because they did not justify the claim that there are causal relations. They failed to do so, he claims, because they did not look where they should have looked; that is, to the experience of effort.

Indeed, he uses the sense of effort as the experiential ground for the belief that there are causal relations. The sense of effort, he argues, presents undoubtable evidence that there are causal relations because it is precisely the transparent experience of a causal relation taking place in oneself. The Biranian account of effort articulates three main claims. I will limit myself to Biran's definition of effort, leaving aside the explanatory powers that he attributes to the phenomenon. First, I will distinguish four meanings of "effort" in Biran's theory. Second, I will contextualise Biran's view by showing that he identifies action and effort: any action is an effort, and vice versa. Third, I will show that Biran conceives effort as a struggle between the will and the body and that he therefore endorses a resistance-based view of effort –more precisely, he defends a psychophysical resistance-based view of effort.

> Biran's resistance-based view: an effort is the attempt, by the agent, to move her body. *That is*, it is the attempt to overcome the resistance of one's body to its being moved.

(i) *Capacity and exercise*. "Effort" refers both to the free and voluntary capacity of the mind to move the body ("effort", that is, the will) and to the exercises of that capacity ("an effort", that is, an exercise of the will).

(ii) *Resistance*. An effort is the exercise of the capacity to cause a change to one's body; that is, to overcome the resistance of one's body.

(iii) *Phenomenology*. There is a feeling of effort. Most if not all efforts are felt. The feeling of effort is the conscious and reflexively transparent experience of effort.

4.2.1. Four Meanings of Effort

Biran identifies the capacity of effort with "the will", understood as this free and spiritual power to move the body. On the one hand, there is the faculty of effort, and on the other, there are the exercises of that faculty. The distinction is entailed by the fact that Biran says that all exercises of effort are exercises of the "same effort" (Biran, 1995, p. 96). But what would this effort be that is always the "same" if not the dispositional faculty of effort that we usually call "the will"? To avoid confusions, I use "the will" to refer to the effort capacity. The will receives the habitual characteristics of the will: it is non-extended, it is self-determined, it is active, and what it produces is voluntary. The self- or in-determinacy of the will appears in the fact that Biran does not explain what triggers a specific exercise of the will, if not the will itself.

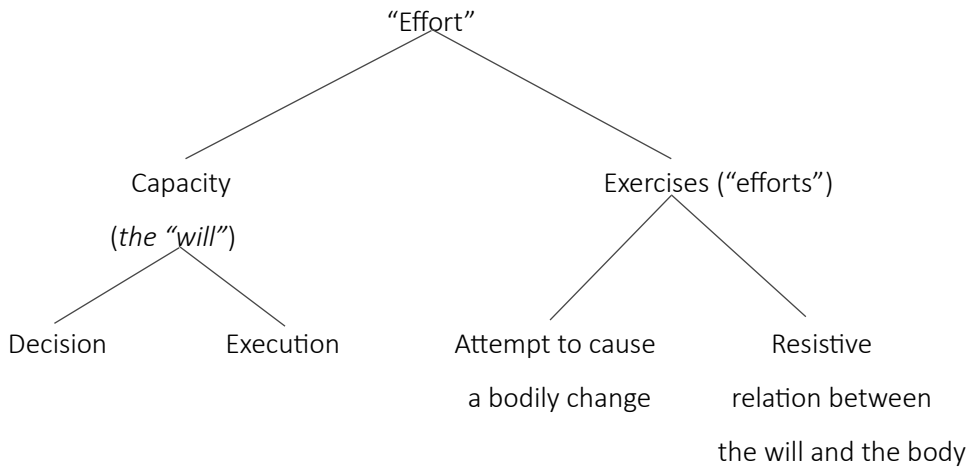
In fact, we even have to distinguish four meanings of "effort" in Biran's theory. First, we must distinguish effort as a capacity to act, from effort as the exercise of that capacity. The capacity can be called "the will"; the exercises of that capacity "efforts". Incidentally, we shall also distinguish two powers of the will: the power to make decisions; and the power to act upon those decisions. Most importantly, we shall distinguish "effort as a cause" and "effort as a relation". On the one hand, there is what Biran calls effort as cause. It is the most fundamental meaning of effort, and it refers to the exercise of the will, understood as the power to act, understood as the power to move the body. On the other hand, there is also a relational meaning of effort that refers to the relation between the action of the will and the resistance of the body. Effort as cause does not refer to the resistance of the body; effort as relation also refer to the resistance of the body. All these aspects of the phenomenon are sometimes called "effort" by Biran:

The will: the capacity of action decision and action execution.

An effort: an exercise of the will, understood as the attempt to overcome the resistance of the body.

A resistive relation: a relation between two powers whose respective effects are contrary, one of the two powers at least being exercised teleologically. Here, the relation between the exercise of the will aiming at moving the body (effort) and the body inertially opposing its being moved (resistance). The resistance is distinct from but essential to the effort.

The feeling of effort: the conscious experience of effort.



4.2.2. Effort and Agency

For Biran, efforts and actions are type identical (Biran, 2001, pp. 128-135). Anytime we act, it is because our will moves our body. He distinguishes action from passion/affection. "Acting" is being the cause of a bodily change and identifying oneself with that cause. "Passion" is the agent being affected by causal powers that are external to her (that is, powers that are not her will since an agent is identified with her will). Both action and passion correspond to feelings: there is a feeling of causing, and there is a feeling of being affected by some external causal power. The feeling of being affected by some causal power is the feeling associated with any affection; the feeling of being a cause is the feeling of effort.

Relatedly, the more an agent exercises effort, the more (she feels that) she exists, and the more (she feels that) she acts (Biran, 2001, p. 140). The contrast between these two experiences is given through

the muscular sense (which is also the sense of touch), for the muscular sense can be both passive and active. He indeed distinguishes the passive sense of touch, which is a pure affection; from the active sense of touch, which represents both an affection (a modification of my body) and its cause (the action of my will, namely, my effort) (Biran, 1995, pp. 159-163).

A bodily modification represented by the muscular sense can be the result of an external cause (an external stimulation, an instinctive desire), in which case the muscular modification will be felt as a passive event. Or it can be the result of an internal cause (an exercise of will, an effort), in which case it will be felt as the result of an active event. Exercising one's will causes a bodily modification, and causing a bodily modification is acting or being active. Receiving a bodily modification from any other cause than an exercise of will is being passive.

4.2.3. Effort of the Will and Bodily Resistance

Effort, in the relevant sense, is the exercise of one's will as a power of action execution. The agent knows what she wants to do; it is, or it implies to move her body. Biran's view is a resistance-based view of effort to the extent that he believes that the body necessarily resists the exercise of the will. Indeed, an exercise of one's will (an effort) has two characteristics: it entails a causal relation as well as a resistive relation. Biran believes that an effort is necessarily productive: if one exercises one's will, one must cause a bodily modification. An effort, therefore, always implies a relation between itself, as cause, and some bodily modifications, as effects.[50] But Biran also believes there is always a resistive relation between the will and the body. Exercising one's will necessarily causes two effects. First, it causes some bodily modifications; otherwise, there is no effort and no exercise of the will since efforts are, by definition, productive. But secondly, an effort also necessarily triggers *bodily resistance*.

The will is seen as a "hyperorganic" force whose exercises are hypothesized to activate a spring located in the brain (Biran, 2001, pp. 119-122).[51] An effort is the manifestation of the mind's

[50] The essential productivity of effort is related to the fact that Biran believes that a power is indissociable from its being exercised, and that if it is exercised it must produce some effect (Biran, 2001, p. 163). The effect of effort (the bodily modification) is both extrinsic and essential to effort. Consequently, "effort" can refer either to the entire causal relation between the mental cause and its bodily effect (effort as relation), or only to the mental cause (effort as cause).

[51] It is unclear what triggers the exercises of that force. It seems that the cause of an effort is either the reasoning faculty of the mind (Biran, 2001, pp. 127-132) or the will itself (Biran, 2001, p. 123). Biran seems to favour the latter option, but he also seems to identify "reason" and "will". In any case, his view entails that the effort-capacity is a dual power fulfilling two functions. It is both the power to cause a bodily change (a power of action execution) and the power to decide which bodily changes to cause (a power of action selection, or decision).

"hyperorganic" capacity, but the exercise of that capacity is necessarily correlated to the manifestation of the "organic" and inertial capacity of the body to resist the effort. Bodily resistance refers to the manifestation of the body's power against the causative power of the mind. The body is not merely the patient of the will's effort; it is also an agent, which manifests its power in an incompatible way. So, when we make efforts, our bodies are not simply affected by our efforts, but they also resist our efforts – although they usually yield to it. Biran indeed believes that the immediate resistance of one's body to one's effort is essential to one's effort, but it is also essentially reducible. That is, the body necessarily resists and yields; it resists as it yields to the effort (Biran, 2001, p. 141).[52] An effort is the exercise of one's will in order to overcome the resistance of one's body. Biran believes that any effort succeeds in overcoming the will.

Thus, Biran distinguishes two effects caused by any effort: a bodily modification (I raise my hand) and bodily resistance (the body resists my hand being moved). But if both the bodily modification and the resistance of one's body are essential to effort, they are nonetheless distinct. For while the modification is an effect that the agent attributes to herself – as an effect of her effort – the resistive dynamic is an effect that feels external; that is, she does not attribute it to herself.[53] If I raise my arm, the raising of my arm appears as an effect of what I do; of my effort, but the resistance that is manifested in my arm is something that appears as an effect of something other than my effort.

The bodily resistance to one's effort feels external because matter is both what is external and what resists. Indeed, Biran precisely defines "matter", including "bodily matter", as that which resists one's effort (Biran, 2001, p.118). Indeed, he believes that the experience and the concept of body – or extended substances – is indissociable from, if not identical to, the experience and concept of

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Not only does it cause or execute a specific bodily modification, but it also decides which modifications to cause. That said, Biran's analysis pertains almost exclusively to the exercise of effort qua power of action execution.

[52] Biran did not believe that an agent's body could ever oppose an irreducible resistance to that agent's effort. Illustrating that point, he mentions the story of Caius Mucius, a Roman soldier and prisoner of the enemy who, once faced with the possibility of torture, put his hand into a fire and let it burn to ashes, thereby showing that he was not afraid and, according to Biran, that the power of one's effort on one's body is absolute. One could argue that he has overlooked two possible cases where an agent's effort is irretrievably resisted by his body. First, there are alleged cases of "naked tryings" where an agent makes an effort to cause some bodily modification, such as lifting her hand, but does not succeed because of some failure at the nervous level, generally provoked by an episode of paralysis, if not by a bad demon. However, the very existence of naked tryings is debated. Second, there is the possibility of 'breakdown,' where the body just collapses. For instance, an agent's tendons may break while she is exerting effort, thereby rendering her effort simply impossible.

[53] "During a willed exercise of effort, the agent integrates as belonging to himself the muscular contraction or the movement performed, as an effect of which he is the cause; and he rejects the resistance or muscular inertia, as something that does not belong to himself". (« Dans l'effort voulu, le moi s'approprie la contraction ou le mouvement opéré comme un effet dont il est cause, et met hors de lui la résistance ou l'inertie musculaire », Biran, 2001, p. 139, my translation).

resistance,[54] and that the resistance of one's own body to one's effort is a primitive fact of experience. The counterpart of this claim is that the agent (the human person, her dignity) is precisely what is not material; it is spiritual.

4.2.4. The Resistance-Based View and its Variations (*5th definition*)

Biran and people like Hobbes or Descartes would probably identify efforts with the same events. Namely, they would all identify efforts with volitional attempts, construed as those actions wherein the agent exercises her will in order to move her body. But at a finer-grained level, they may not describe these volitions in the same way. Crucially, Biran would maintain that we need to add one ingredient to find the complete recipe, this ingredient being bodily resistance. To make an effort is to try to move one's body; but trying to move one's body *is* trying to overcome the resistance of one's body (the "is" being the is of identify here).

Biran's view falls into a general formal resistance-based view of effort, which I will endorse and call "the agonistic definition". It has various versions, just like the formal investment-based view is compatible with many theories of what the resources that we deplete during an action are. Likewise, resistance-based views share a formal structural claim, which is the claim that an effort is an attempt to overcome some resistance, or so I'll argue in the last part of this work. But they disagree regarding the substantial nature of *that* which resists, and *that* which is resisted. Indeed, resistance entails a relation between a resist*ing* agent and a resist*ed* power. There is that, which tries to overcome (the striving agent) and there is that, which resists (the resistive power) The resistive power may be a substantive agent too on some occasions. To illustrate, the French Resistance is a striving (collective) agent, in that it tries to overcome the Nazi occupation. But the Nazi occupation is also a collective agent, as it tries to eradicate the French Resistance.

We can distinguish resistance-based views based on their conceptions of the two agents and powers of the resistive relation. For instance, the view defended by Olivier Massin (2017) defines effort as a teleological exercise of physical force, this force being at least partly compensated by a force with opposite direction. But while Massin identifies physical effort with the teleological exercise of the power of one's body to overcome the resistance of external mechanical forces, Maine de Biran identifies effort with the teleological exercise of the power of one's will to overcome the resistance of one's own body.

[54] Indeed, he argues that the origin of an agent's idea of an extended, material substance lies in her experience of something (namely, her body) resisting her exercise of will. In so doing, he refers to Leibniz's idea that "extension is the continuity of that which resists" (Biran, 2001, p. 141).

This is one illustration of how different resistance-based views are possible. On the one hand, the relation is believed to obtain between one's will and one's body; on the other hand, the relation is believed to obtain between two physical forces, the force that one exercises and some opposite force in the environment. These two examples are resistance-based views of physical effort. One could also adopt a resistance-based view of mental effort such as the view that an effort is the attempt to overcome some mental resistance. So, just like we can distinguish investment-based views based on their conceptions of the resource being invested during effort; likewise, we can distinguish resistance-based views based on how they conceive the resisting and resisted powers. I'll come back to the formal resistance-based view later. For the moment, I shall restrict myself to Biran's resistance-based view, for the formal resistance-based view is a proposal that I will thoroughly develop later

(v) The Resistance-based view: an effort is an attempt to move one's body resisted by the body

- Making an effort is, for an agent, trying to overcome the resistance of the body to its being moved.

4.3. Centralism: The Feeling of Trying to Contract Muscles

To conclude this chapter, I now turn to feeling-based views of physical effort: first, the centralist view; second, the peripheralist view. Both roughly agree with the volitional approach, at least at an intuitive level: making an effort is trying to exercise the body. To begin with, let me make a general remark about feeling-based approaches.

4.3.1. Feeling-Based Approaches to Physical Effort

Effort is often conceived as the voluntary attempt to move one's body. I now turn my attention to feeling-based versions of this view. These approaches are deemed "feeling-based approaches" because they approach effort by studying (the neurophysiological structure of) its phenomenology. To recall, there are four major theories of the feeling of effort as we saw during the second chapter. They are primarily interested in the question of the physical basis of this feeling: what happens within the brain and the body, when we have a conscious experience ("feeling") of effort? What neurophysiological processes realize the awareness of effort? These theories are empirical works indeed. Researchers in these domains try to understand what happen in the brain and in the body when we feel effort. But in so doing, they all say two interesting things. On the one hand, they obviously assume that there is something like a sensation of effort, a claim I don't challenge. But on the other hand, they also hereby assume a specific definition of the nature of effort.

Each theory of the feeling of effort thus holds three claims to be precise. First, they claim that there is a sensation of effort. Second, they defend an empirical theory about the neurophysiological basis of this sensation. Third and most importantly, they hereby implicitly defend a definition of effort. The first two theories deal with the feeling of physical effort; the last two views are concerned with the feeling of mental effort. During the last two sections of this chapter, I focus on the two feeling-based views of bodily effort, namely centralism and peripheralism. In the next chapter, I will deal with feeling-based views of mental effort. With respect to the feeling of bodily effort, a century-long debate opposes centralists to peripheralists.

I will now introduce centralism (4.3.2.) and I show that centralists presuppose the volitional view of effort (4.3.3.). Then I will turn to peripheralism (6.4.). I will show that peripheralists endorse an exercise-based view –the view that an effort is the exercise of one's body (not merely the *attempt* to move it). At the same time, I will show that both centralism and peripheralism are compatible with agentivism. In that way, I solidify the general argument for agentivism that I give during the second chapter by

motivating the second premise, which is the premise that "the feeling of effort is the feeling of performing an action".

4.3.2. Centralism

The "sense of effort" has started to receive sustained attention in the 19th century (Jeannerod, 1996, chap. 3) when it became the center of a dispute between two rival theories. On one side, peripheralists have argued that the sense of effort is the experience of muscular contractions, while centralists have argued that it is the experience of the mental activity that is deployed in order to contract the muscles. Both theories admit that there is a sense of effort just like, we could say, there is a sense of sight or a feeling of pain. They assume that there is a conscious experience of effort and that it has some distinctive properties in virtue of which we recognize it, and in virtue of which we can discriminate it from other senses or feelings. In other words, both admit that we all clearly know from introspection what it is like to feel effort. To them, the key question is: what happens in the body when we feel effort?

Centralists (eg., Bain, 1855; Marcora, 2009; Pageaux, 2016; and Wundt, 1896) believe that, at the neurophysiological level, the sense of effort is realized by efferent signals; typically, motor commands that move from the motor areas of the brain to the peripheral nervous system. In other words: when I have a sense of effort, I have a sense of motor commands, of signals emitted by the motor areas of my brain and moving towards my muscles.

Centralist appeal to cases of "naked tryings" as an intuitive argument for their view. These cases suggest that the sense of bodily exercise – for instance, the sense of muscular tension – is not necessary for the sense of effort. The argument is that a patient who tries to move an anesthetized and paralyzed limb reports a feeling of effort; although she cannot, because of the paralysis, move or feel the body part she tries to move. Ergo, one can feel effort even if one is unable to feel muscular tension. Consequently, the sense of effort must be a sense of the mental activity required to move a limb, since the agent feels effort while she is trying to move a body part (Lansing & Banzett, 1993). Now, it is worth noting that there is no empirical evidence that we can feel efferences like motor commands themselves. But there is empirical evidence that we can experience derivative signals, called efference copies.[55] In any case, the idea is that the

[55] I'll talk more about efferences when I introduce the comparator-model view of the feeling of effort.

> "perception of effort is a "sensation of innervation," that is, the conscious awareness of the central motor command sent to the active muscles […] We define central motor command as the activity of premotor and motor areas of the brain related to voluntary muscle contractions […] It is generally accepted that a corollary discharge of the central motor command is processed by sensory areas of the brain to generate perception of effort […] although theoretically it is also possible that perception of effort arises directly from activity of premotor and motor areas of the brain." (de Morree et al., 2012)

The centralist view is, thus, the view that feeling effort is being aware of motor commands (or their efference copies) being emitted. In reductionist terms, this is the view that efforts just are efferences, emissions of motor commands. How can we describe efferences in non-reductionist terms? What does it mean for consciousness? The best translation I can think of is simply that efferences are attempts to move one's body or, more precisely, to contract one's muscles.[56] The centralist view amounts to the view that when an agent feels effort, she feels that she is trying to contract her muscles, whether or not her muscles are actually contracted. An effort is an attempt to move one's body, the sense of effort is the sense of doing whatever it is that we do when we try to move our body. In other words, centralists endorse the volitional theory of effort. Crucially, the centralist implicit definition of effort (namely, the volitional theory of effort) implies that it is not essential to successfully move one's body to make an effort. An effort is an attempt to move one's body, and such an effort can fail to move the body.

Indeed, while peripheralism claims that the sense of effort is the sense that my muscles are contract*ed*, centralism claims that it is the sense that I am contracti*ng* my muscles, id est, that I am doing whatever it is that I need to do to contract them, and which usually results in their contraction. It is not the sense that my muscles are contracted, it is the sense that "I am doing something" to contract them. The sense of effort is not the perception of muscular contraction but is the sense of the central activity required to contract my muscles and exercise my body. It is worth noting that centralists also seem to endorse the implicit view that any attempt to exercise one's body is accompanied by a sense of effort; that is, one cannot try to move one's body without having a sense of effort.

[56] Contracting one's muscles implies, if the contraction if successful, that the muscles have moved; but not necessarily that the body has moved in an observable way for an external observatory. I here consider that "trying to move" include attempts at performing non-clearly observable movements, like trying to contract one's biceps.

The centralist view of the sense of effort: the sense of effort is the conscious experience of trying to contract one's muscles, an experience which is realized by efference signals moving from the motor areas of the brain to the peripheral nervous system.

4.3.3. Centralism as a Volitional View

Thus, if we assume representationalism, it quite easily follows that efforts are actions, that effort is on the agentive side. The representational assumption boils down to the view that the sense of effort is the intentional experience of effort. That is, the intentional object of the experience of effort is effort. What is effort? Efforts are efferences, that is in non-reductionist terms, attempts to contract the muscles, attempts to move the body. But attempting to contract the muscles is clearly something that we do, as opposed to something that happens to us.[57] Thus, the centralist view of the feeling of effort is compatible with agentivism, on two conditions. First, we must accept that issuing a motor command is what constitutes, or is identical to, the event of trying to move. Second, we must accept that trying to move is an action.

Trying to move is clearly an active event if we contrast it to the two other possible categorizations of effort's genus. On the one hand, trying to move is the manifestation of capacity and not merely a dispositional capacity, as opposed to the capacity-based view. On the other hand, trying to move is clearly active in contrast, for instance, to being moved by something else. If my body moves because of the wind, an earthquake or because I'm hit by a car, I am passive. If I move my body, I am active. Now, I may be passive in another sense. If I move my body to go and buy cigarettes, I may be passive in the sense that my motive for this action is an addiction. But we don't need to show that an effort is an action in an authentic, emancipated way. We just need to show that efforts are actions –things we do as opposed to things that happen to us. And trying to move one's body clearly is something that we do when we contrast it to events where the body is moved by something else than "us".

[57] However, we shall see later that one could object that we are not active when "we" automatically contract our muscles, as in reflex and automatic movements. But the centralist view clearly focuses on cases where we have an awareness of mentally trying to move our body. On the other hand, it seems that we don't have such an experience of mentally trying to move the body when the body moves on its own, like in reflex movements. Consequently, centralists only talk about cases of voluntary movements. It is, in turn, pretty intuitive that those voluntary movements are on the agentive side, on the side of things we do in contrast to things that happen to us.

The centralist-induced view of effort: an effort is, for an agent, an attempt to move one's body.

P1 The feeling of effort is the experience of effort, and effort only (representationalist assumption).

P2 The experience of effort is realized by the issuing of motor commands (centralist definition).

C^1. In reductionist terms, an effort is the issuing of motor commands.

P3 In non-reductionist terms, issuing a motor command is trying to move (supervenience assumption)

$C^{2.}$ In non-reductionist terms, an effort is a trying to move.

P4 Trying to move is an action (overlooking assumption)[58]

C^3. An effort is an action.

[58] This overlooking assumption refers to the fact, discussed during the introduction of the volitional definition (4.1.1.), that I reject or at least overlook genuine cases of naked tryings.

4.4. Peripheralism: The Feeling of Contracted Muscles

As long as we agree that trying to move is an agentive process, it follows that centralism is compatible with agentivism. In fact, centralists presuppose the volitional view of effort, of which they give one particular feeling-based approach. The story is a little more complicated with respect to peripheralism. Strictly speaking indeed, peripheralism is incompatible with agentivism. But it is also implausible and, in fact, incoherent with the very assumptions held by peripheralists themselves. I will thus develop an amended peripheralist view that is compatible with agentivism and, at the same time, faithful to the conceptual assumptions of the theory. In a first time, (4.4.1.) I introduce the peripheralist account; in a second time (4.4.2.) I show why the strict peripheralist view is incompatible with agentivism and implausible; in a third time (4.4.3.) I introduce the amended peripheralist view, which yields the exercise-based view of effort (4.4.4.).

4.4.1. Peripheralism

Peripheralists (eg., Bell, 1826; James, 1880; 1890; Ferrier, 1886) claim that at the neurophysiological level, the conscious feeling of effort is generated by afferent signals that move from the peripheral nervous system up to the brain, carrying information about the state of the agent's muscles. They entail that in non-reductionist terms, the intentional content of the feeling of effort is muscular tension. The sense of effort is the conscious experience of tension in one's muscles: when an agent feels effort, she feels tension in her muscles; she feels that they are contracted. They consequently entail that effort is muscular tension.

There are two extensionally different versions of the peripheralist view. The narrow version states that the sense of effort is the experience of muscular tension, while the broader version states that it also includes the experience of respiratory and cardiovascular activity. According to the broad version, the sense of effort represents more peripheral signals than just those from the muscles. It also represents signals from the agent's joints, tissues, and organs such as the heart and lungs, which are mobilized in physical exercise (Borg, 1962; James, 1880; Marcora, 2009). The broad version has been defended recently by exercise scientists interested in the determinants of exercise performance, who argue that the sense of effort is a key limiting determinant to physical exertion (Cabanac, 2006; Dempsey et al., 2008; Salamone et al., 2007). They define the sense of effort – otherwise called sense of "exertion"– as the perception of major bodily adaptations during physical exertion, such as contractions of skeletal muscles, and changes in the heart and lungs.

Although the narrow and broad versions of peripheralism are not extensionally equivalent – the broad version includes more types of afferent signals – they are nonetheless both peripheralist. That is, they both construe the feeling of effort as a feeling constituted by afferent signals carrying information about the body to the brain. The sense of effort, they believe, carries information about bodily modifications usually resulting from physical exercise, but it does not carry information about what the agent might have done to physically exercise. That clarification being made, I shall restrict myself to discussing the narrow version. What is said about the narrow version can be said, mutatis mutandis, of the broad version.

> The peripheralist view of the sense of effort: the sense of effort is the conscious experience of muscular tension, an experience which is realized by afferent signals moving from the muscles to the sensory areas of the brain.

4.4.2. The Problem with Peripheralism

Peripheralism entails that effort just is muscular tension, muscles being contracted. This is, however, incompatible with agentivism. Indeed, muscles can be contracted automatically, such as in cramps or in the context of external stimulation (Massin, 2017, 2022a). It is true that "effort" once had a passive meaning. Indeed, one dictionary recalls that near the end of the 17th century, "effort" could refer to the damage provoked by a too excessive muscular activity.[59] *Having* an effort, in that perspective, meant having and feeling some damage and hard tension in one's sore muscles after a too important physical exercise. This meaning of "effort" entails a non-agentive view. Likewise, the peripheralist definition entails that effort is or at least can be a passive phenomenon. The feeling of effort is the feeling of tension in our muscles; effort just is tension in our muscles, whether we actively contract them (like when we do physical exercise) or whether they are automatically tensed (like they are in cramps and, more generally, at most instant of our life for many muscles).

I propose to reject the purely passive view of effort. Again, it is really odd to say that we have efforts in our muscles, or that we have or make efforts in our sleep. What is more, many muscles are still contracted when we sleep or lie awake. Do we make efforts in such circumstances? Now, an intuitive way to conciliate peripheralism with agentivism is to defend the view that the sense of effort is the sense

[59] https://www.cnrtl.fr/etymologie/effort

of intentionally generated muscular contractions. I thus propose to amend the peripheralist view by restricting the feeling of effort to the feeling of *voluntary muscular contractions*.

4.4.3. Amended Peripheralism: The Voluntary Exercise of the Body

This view amounts to a joint account of peripheralism and centralism. It is the view that the sense of effort is the experience of muscular tension (or more generally, the experience of the body being activated) caused by a central "innervation". The amended peripheralist view of effort refers to what I will call afterwards the exercise-based definition. Making an effort is exercising one's body, it is moving the body, exerting force, contracting the muscles. Pace the volitional definition, the exercise-based definition entails that the agent must succeed in contracting her muscles if she makes an effort. Now, the goal of the effort may be outside the body, in that it may be (for instance), to grab a certain item in one's environment. But any effort according to the exercise-based view is a successful effort according to the volitional view.

> The amended peripheralist view of the sense of effort: the sense of effort is the conscious experience of voluntary muscular tension, an experience which is realized by the conjunction of efference signals moving from the motor areas of the brain to the peripheral nervous system and afferent signals moving from the muscles to the sensory areas of the brain.
>
> The amended peripheralist view of effort: an effort is the voluntary contraction of one's muscles.

Why should we accept this modified version of peripheralism? There are two reasons. First, it seems to me to be highly intuitive. When we think about physical effort, we tend to think about the voluntary exercise of our body. But the voluntary exercise of one's body is primarily and mostly the voluntary contraction of one's muscles. Secondly, this amended version of peripheralism might be in fact compatible with the spirit of at least some peripheralist authors. Indeed, some peripheralists like James offer an interesting introspective description of their explanandum. Centralists and peripheralist agree that there is a sense of effort. What is more, they seem to agree concerning the type of conscious experience it is, whose neurophysiological correlates they want to discover. They want to understand the neurophysiology of the sense of effort; their explanandum is the sense of effort's realizers. But if they disagree regarding the realizers of the feeling of effort, it must be because they (at least believe that they) agree concerning the introspective nature and definition of the sense of effort. They wouldn't

disagree if they weren't investigating the realizers of the same phenomenon. If they weren't investigating the realizers of the same phenomenon, they would not disagree for they wouldn't be speaking about the same thing. Now, the discussion may be impeded by the fact that they do not sufficiently describe, in non-neurophysiological terms, the feeling of effort. Still, both tend to equate the sense of effort with a distinctive sense of *activity*, which enables the distinguishing of activity and passivity. James, who is clearly a peripheralist about the realizers of the sense of effort, begins his paper on the topic by the following statements:

> "That we have a feeling of effort there can be no doubt. Popular language has sufficiently consecrated the fact by the institution of the word effort, and its synonyms exertion, striving, straining. The difference between a simply passive sensation, and one in which the elements of volition and attention are found, has also been recorded by popular speech in the difference between such verbs as to see and to look; to hear and to listen; to smell and to scent; to feel and to touch. Effort, attention, and volition are, in fact, similar elements of Feeling differing and in the same generic manner from its receptive, or simply sensational elements: and forming the active as distinguished from the passive parts of our mental nature. […] Fully admitting the *feelings of active energy* as mental facts, our question simply is of what nervous processes are they concomitants? As the feeling of effort is nowhere more coarsely and obviously present than in the phenomenon of muscular exertion, let us limit our inquiry first to that". (James, 1880, my emphasis).

Thus, James' description of the feeling of effort in ordinary language resorts to the idea of active energy and to the idea that there is a difference between passive sensations and sensations in which the "elements of volition" are found. In other words, the peripheralist description of the sense of effort in ordinary language refers to the sense of doing something (such as looking and listening in contrast to hearing and seeing). Researchers like James then try to discover the biological basis of this feeling in the context of physical exertion. It thus seems plausible that peripheralists aim at understanding the realizers of a sense which is a sense of doing something, in contrast to sensory experiences in which the element of volition is absent.

If this assumption is correct, it entails that peripheralists have developed an empirical theory that simply doesn't match what it is supposed to explain. They want to discover the realizers of the feeling of "active energy" (Forrest, 2007). But their neurophysiological thesis contradicts their conceptual starting point. Their theory entails that the sense of effort is not necessarily a sense of activity – their scientific explanation does not account for their introspective explanandum. The sense of my muscles being

contracted is not necessarily a sense of activity because my muscles and body can be activated passively. Noticeably, it is an a priori reasoning that leads James to defend the peripheralist view. Indeed, James thinks that nature follows a principle of parsimony that would be violated if we admitted centralism. That is, he claims that we only feel signals moving from the periphery to the brain, but not signals moving from the brain to the periphery. This is because it is a more economical view to think that the nervous system is only sentient in an afferent direction.

This however leads to an inconsequent theory. For if we refuse to admit that we can have a conscious experience of the efferent activity of the nervous system, then it becomes difficult to understand how we can distinguish between active and passive sensations, whereas James admits that we can. Thus, it seems that James wouldn't disagree with the claim that effort is an active phenomenon. However, if he is to maintain that effort is an active phenomenon, he would have to revise his view of the realizers of the feeling of effort. This leads me to the conclusion that the amended peripheralist view is perhaps closer to the phenomenon that peripheralists wanted to explain. That is, the amended peripheralist view, which is the conjunction of peripheralism and centralism, is a better neurophysiological explanation of what peripheralists wanted to explain –the sense of effort, understood as the sense of activity. In any case, this is the amended peripheralist view that I shall discuss during the next chapter.

Amended peripheralism is not centralism. Finally, it is important to note that the amended peripheralist view does not boil down to centralism. To see the difference, consider their discussion of "naked tryings" by centralists and peripheralists. Centralists say that a patient who tries to move an anesthetized and paralyzed limb reports a feeling of effort; although she cannot, because of the paralysis, move or feel the body part she tries to move. Ergo, the feeling of effort must be the feeling of efferences only. Peripheralists' reply is to deny that muscular tension is lacking in such cases. They claim that some muscular contractions must have occurred, albeit upstream of the paralyzed limb. These contractions were, arguably, missed by the centralists. In any case, the important conceptual point here is that centralists deny that any actual muscular tension is necessary to the sense of effort. On the contrary, the amended peripheralist view implies that actual muscular tension is necessary for feeling effort, albeit not sufficient.

4.4.4. The Exercise-Based View (*6th definition*)

The exercise-based theory of effort has some intuitive appeal to the extent that it equates effort with a type of event that we often call efforts: namely, physical exercise, the exercise of one's body, the exertion of muscular force. The volitional view entails that an effort does not necessarily implies any

movement of the body, or any contraction of the muscles. Making an effort just is trying to move the body, whether it moves or not. On the contrary, the exercise-based view entails that an effort necessarily implies the movement of the body, the contraction of the muscles, since an effort is the exercise of the body. I propose to say that this view refers to the *exercise* of the body because exercise can refer to the muscular contraction, but also to the overt movement as well as the cardiovascular and respiratory activities accompanying muscular contractions. After all, we often use "effort" to refer to exercises of our body. The exercise-based definition uses this speech-habit as the basis for its definition of effort. This definition of effort plays a central role in sport science (Borg, 1962; Steele, 2021). In this context, exercising the body refers to an intentional action whose goal is outside the body, so to speak. The agent does something with her body, in order to cause a certain change in the external world. For instance, she exercises her body in a manner that we call running, in order to finish a marathon.

(vi) The Exercise-based definition: an effort is a *voluntary exertion*.

- Making an effort is, for an agent, intentionally exercising her body.

4.4.5. Conclusion: Can there Be Unfelt Effort and How Fundamental is Bodily Effort?

This chapter focused on theories of effort mostly interested in physical effort. At a coarse-grained level, they all endorse the volitional view that an effort is an attempt to move the body. At a finer-grained level, they propose different characterization of this rough definition. The basic version claims that an effort is an attempt to move the body; the resistance-based version brings some complexion by adding that such an attempt is in fact an attempt to overcome the resistance of the body; the exercise-based approach adds that it is not just the attempt, but really the *exercise* of the body (the body must be exercised in some way during the effort); centralism and peripheralism imply that physical effort usually if not necessarily comes with some distinctive feeling.

The Volitional definition: an effort is a *volitional action.*

–Making an effort is, for an agent, trying to move her body.

The Resistance-based view: an effort is a resisted attempt to move one's body

–Making an effort is, for an agent, trying to overcome the resistance of the body to its being moved.

The Exercise-based definition: an effort is a *voluntary exertion*.

–making an effort is, for an agent, intentionally exercising her body.

In comparison to the conatus-based and investment-based views, these volitional approaches to physical effort have more intuitive appeal. They, however, raise three questions, if not three issues. (i) First, even if they have the same pretheoretical understanding of effort, they nevertheless constitute three different characterizations of it. A friend of the volitional approach should explain which version of this general approach (the basic one, the resistance-based one or the exercise-based one) is the most fundamental and plausible. (ii) Second, this exclusive focus on physical effort raises the worry as to whether these views have missed something. For indeed, commonsense also admits mental effort. Now, the volitional approach gives a role to the mental, for it is the *will* that is mobilized during the moving of the body. However, the folk notion of mental effort probably refers to something else, to the extent that this ordinary notion doesn't connect mental effort in such an essential respect to the body. The question raised, thus, is: how fundamental is bodily effort? Is it the only genuine effort? What about the intuitive belief that there are mental, non-physical efforts then? (iii) Third, the centralist and peripheralist theories

implicitly suggest that effort may be essentially felt. But this raises some questions. First, do they really maintain that the sense of effort is essential to effort? If they do, in what sense is it so: does it mean that an attempt to move one's body is only an effort if it is felt? or does it mean that all attempts to move one's body are felt? To conclude, we are yet to precisely understand the exact nature of physical effort, whether it is essentially felt and whether it is the only genuine effort that there is.

5. The Feeling of Mental Effort

Introduction. Effort belongs to the category of agency, but we need to understand how it does. To that effect, we are investigating the usual conceptions of how *effort* specifies *agency*. We already inquired two theoretical spaces: first, the space where effort is associated with the finitude of the agents and denotes the costly nature of agency; second, the space where effort is reduced to physical effort, conceived in simple volitional, resistance-based or exercise-based terms. During this third and last chapter of the inquiry, I am now turning to mental effort. On a methodological note, this chapter will conclude both my defence of agentivism and my attempt to identify common definitions of effort. Mental effort is never so central than for the theories of its feeling. Consequently, this is primarily a chapter about the feeling of mental effort. This focus on the phenomenology suggests that mental effort might be an action with some habitual, if not essential, felt dimension. I shall focus on two recent and well-supported theories.

(5.1.) In a first time, I investigate the comparator model of action control and phenomenology. The exact meaning of effort here is not so clear, so I will afford myself some interpretative margin. The model attributes two essential properties to efforts. First, there is a disturbance property: an effort is pictured as an action that does not unfold easily. Second, there is a persevering property: an effort is depicted as an action that requires some perseverance, some increased engagement, in order to be performed successfully. With respect to the feeling of effort, the comparator model contrasts it with the feeling of efficacy. While the feeling of efficacy indicates to the agent that the action is unfolding easily, the feeling of effort indicates that it isn't. It is unclear whether there can be effort if there is no feeling of effort. The comparator model ultimately suggests a difficulty-based view of effort: acting effortfully is for an agent to try to perform an action that is difficult for her. Difficulty, in turn, seems to be characterized phenomenally: a difficult action is an action that generates, and is performed with, the feeling of effort. This seems to be the deep meaning of effort that the defenders of this model have in mind, or so it is my proposal. Effort is an action that is accompanied with a certain feeling, which indicates to the agent that she needs to deploy some capacities above a certain threshold. The sense of effort, in other words, is a noetic feeling indicating to the agent that she must invest herself above some minimal threshold if she is to succeed.

(5.2.) In a second time, I present the cognitive control research program about the feeling of effort. While the comparator model suggests that the feeling of effort indicates to the agent that she should do a lot to succeed, the cognitive control research program maintains that it indicates to the agent that she is doing too much. Indeed, the feeling of mental effort is generated when subpersonal level neural

processes estimate that the agent is deploying too much mental control in terms of optimal resource allocation. The brain thus sends an easy recognizable signal to the conscious agent, which is the "unpleasant feeling of mental effort". This model is compatible with two, if not three definitions of effort: the view that effort is the exercise of mental control; the view that effort is the exercise of mental control only when it generates the unpleasant feeling of mental effort; third, the view that effort is the act of persevering in the exercise of too much mental control.[60]

[60] I mention it but I will not develop this perseverance-based view here, for it is completely absent from the cognitive control literature. I will come back to it when I talk about efforts of will in the next part.

5.1. The Comparator Model: The Feeling of Having to Do a Lot

Introduction. The comparator model is a conceptual framework inspired by engineering research. It has been a source of inspiration for philosophers trying to understand the sense of agency, especially in the context of skepticism about the efficacy of human's conscious control over their actions (Libet, 1999; Wegner & Wheatley, 1999). The sense of agency is the sense that one has to be the author of one's action (Pacherie, 2008). The comparator model (hereafter CM) enables to understand the sense of effort in relation to the sense of efficacy. The idea is the following. Both experiences can contribute to the sense of agency, albeit in opposite manners. While the sense of efficacy is the experience of performing an action with ease, the sense of effort is the experience of performing an action with difficulty. The sense of efficacy represents my action as going smoothly towards its successful completion. The sense of effort represents my action as being demanding for me.

The CM endorses, or so it is my interpretation, the claim that an effort is a difficult action, and that difficulty is (or results in) a phenomenal property. Namely, an action is difficult if it generates a feeling of effort, which is the feeling of having to deploy some capacity above a given threshold. (5.1.1.) I will first introduce the comparator model. (5.1.2.) I will then show that it attributes two properties to the feeling of effort, but that it doesn't clearly explain how they should be coherently integrated into one definition of effort. On the one hand, it is the feeling that my action is failing; on the other hand, it is the feeling that I'm doing something to prevent my action from failing. (5.1.3.) I will develop a plausible interpretation according to which the comparator model suggests the following story: an effort is a difficult action, a difficult action is an action that generates the feeling of effort, and the feeling of effort is a feeling indicating to the agent that she needs to mobilize her capacities above a certain level, or that she needs to deploy some specific capacity relevant for the specific agentive context.

5.1.1. The Comparator Model

As far as the feeling of bodily effort is concerned, peripheralism was the orthodox position until the middle of the 20th century, while centralism has now become widely accepted (Jeannerod, 1996). The dominance of centralism is related to scientific findings concerning efference copies, which are central to the comparator model of action control. This model has, however, developed a theory of the feeling of effort in its own right. This theory does not restrict the feeling of effort to bodily actions, for it maintains that both mental and physical actions can generate a feeling of effort. I, thus, treat it as a

theory of the feeling of mental effort –for only a feeling of mental effort can accompany both mental and physical actions.

The acceptance of centralism is related to the development of scientific research concerning "efference copies". It has been argued that when an efference (a motor command) is issued, an "efference copy" of that command (Frith, 2012), also called "corollary discharge" (Sperry, 1950) or "internal feedback" (Miles and Evarts, 1979), is sent to certain modules in the sensory areas of the brain. Those regions can compute the expected sensory consequence of the motor command before the motor command is even sent to the peripheral nervous system. In other words, there is evidence that the brain can anticipate and feel the sensory consequences of its motor commands before these commands are sent to the muscles, before the movements are performed. Efference copies are believed to play several functional roles, such as distinguishing between self-generated and externally generated sensory effects, attenuating sensory effects consecutively to one's action, and establishing the success or failure of a given action or bypassing sensory feedback delays (Frith, 2012).

With respect to the sense of effort and the debate between peripheralists and centralists, the existence of efference copies has had two main impacts: it has been seen as evidence in favor of centralism, but it also led to the development of another view of the sense of effort. First, the centralist view has indeed become orthodox because the efference copy mechanism has been seen as evidence for the claim that we can feel efferences like motor commands, and not merely the bodily modifications resulting from such efferences. That is, efference copies seem to falsify James' idea that the nervous system is not sentient in the efferent direction.

Secondly, the discovery of efference copies has led the development of the "internal" or "comparator" model of action's control and awareness (Frith, 2012; Frith et al., 2000; Pacherie, 2008; Wolpert, 1997), which itself led to a distinct account of the sense of effort. The comparator model postulates that, during voluntary movements, two kinds of neural system perform a series of comparisons between neural signals, and that these comparisons play an essential role in the control and perception of action. On the one hand, there is a neural-cognitive module called "*the controller*". When an agent is acting, or about to act, the controller (a "neural inverse model") is said to compute the agent's (or system's) current and desired states as inputs, in order to output a motor command. In other words, the controller/inverse model estimates which particular motor command should be issued if the system is in one state and wants to be in another.

On the other hand, there is "*the predictor*". When the controller module has identified an adequate motor command, a copy of the selected motor command (the efference copy, or corollary discharge) is sent to the predictors (the "forward model"), which outputs a representation of the system's expected state if the motor command is to be performed. In other words, when we want and\or try to move (but

also when we move automatically), the brain *selects* motor commands that seem adequate with respect to the final state we want to reach and *estimates* the expected sensory consequences of the implementation of those commands. The idea, then, is that the less discrepancy between the expected and the actual sensory consequences of the movement, the more we have a feeling of efficacy; while the more discrepancy between the expected and actual sensory consequences of the movement, the more we have a feeling of effort.

5.1.2. Interpretative Issues

The empirical content of the CM is clear: the feeling of effort is proximally caused by error signals. When it comes to physical actions, error signals are mismatches between expected sensory afferences and actual sensory feedback. But the conceptual apparatus is not as clear. Some interpretative work is needed to clarify what the feeling of effort is, in ordinary terms, for the first-person perceiver. We must clarify what it is like for a conscious agent to have an experience of effort according to the defenders of the CM. From that, we will then be able to retrieve the underlying definition of effort. Note that for simplicity, I analyze the theory in relation to physical actions only. But the theory applies both to mental and physical actions.

The comparator-model links the feeling of effort to the following agentive sequence: (i) the agent (her brain) wants to perform a movement and selects one movement sequences; (ii) she expects some sensory effects to ensue; (iii) the actual sensory feedbacks of the movement do not match the anticipated ones; (iv) some error signals are generated; (v) the agent must exercise, or exercises control to put the action back on track, to succeed despite the initial failure. The question is: when is the feeling of effort generated? Is it generated when the agent experiences the mismatch between the expected and the actual sensory consequences of her movement (the fourth sequence)? Or is it generated only when she exercises control to put the action back on track (the fifth sequence)? Do I feel effort when I feel that my action is not yielding the effects it should yield, or do I feel effort when I feel that I exercise control to overcome whatever disturbances are responsible for the failure of (the beginning of) my action? Does the feeling of effort arise out of the initial failure of my action, or does it arise out of the subsequent exertion of control to correct the problem? Prima facie, we find a tension between these two suggestions:

A failure-based view: the feeling of effort is the feeling of an action not going as planned; an effort is an action not going as planned.

A control-based view: the feeling of effort is the feeling of having to exert control to keep an action on track; an effort is an action of control (it is for the agent to exercise some control).

Neither interpretation is satisfying. According to the first one, the feeling of effort would be the conscious experience of my action as fail*ing*. The sense of effort would be the conscious experience of an action not producing the effects it was supposed to produce, an experience realized by error signals. An effort would be an action not producing the effects it was expected to produce. That is, an effort would be a *failing action* –making an effort would be, for an agent, to fail to succeed as anticipated in her action. Now, it would be an agentive feeling. It wouldn't be the feeling that I failed; but the feeling that right now, I'm failing, that my action is going to fail if I don't change something in how I act. Still, this failure-based approach would tie failure and effort essentially. This is, however, strange and implausible. Hard efforts can succeed; easy efforts can fail. Consequently, there is no essential connection between failure and effort (Massin, 2017). When an agent considers a task that she knows to be difficult, she anticipates the difficulty of the task, she is expecting that she will have to overcome perturbating factors, obstacles and resistances. Yet, she will still have to make efforts.

The control-based suggestion does not fare better. The control-based view as such is more plausible than the failure-based one. It is entailed by the cognitive control research program, which I'll discuss during the next section. Roughly, acting effortfully on this view just is exercising some mental control capacity, or exercising it above a certain threshold that generates an unpleasant feeling ("the feeling of mental effort"). Now, the CM also suggests that acting effortfully could be acting in a way that generates a feeling, which is the feeling of mental effort. However, the CM and the cognitive control research program offer two incompatible (or at least distinct) descriptions of the feeling of mental effort. In relation to cognitive control, the feeling of effort is conceived as the unpleasant feeling that I am doing too much, that is, that I am investing too much control. The feeling of effort, in this acceptance, is unpleasant and motivates disengagement.

In contrast, proponents of the comparator-model maintain that the feeling of effort indicates that "I need to do more". The content of the feeling of effort is not something like "I'm investing too much control right now and I should switch strategy or give up", it is on the contrary "I'm not doing enough right now, I should exert (more) control if I want this action to succeed". Therefore, the comparator model relies on a genuine account that can't simply be reduced to the control-based view of effort.

5.1.3. The Noetic Feeling that an Action is Difficult for Me

The best way to capture the notion of effort at stake here is to refine the first-person level description of the feeling of effort that the CM assumes. The feeling of effort is caused by error signals. But what is it like for a conscious agent to undergo such an experience? Proponents of the CM describe it in terms of an experience of *having-to-do-more* or *having-to-do-a-lot*. To illustrate, consider the two following quotations:

> "The "sense of effort", in contrast [to the sense of efficacy], arises when an action has an uncertain trajectory, feels difficult, and *demands* the exertion of control. In this case, actions do not unfold as anticipated and *require* continuing adaptation if they are to be efficacious."(Lukitsch, 2020, p. 955, my emphasis)

> "When something is wrong, one normally feels one *has to* exert control to keep the action on track. The type of control one has to exert depends on the nature of the perturbating factors. Perturbations may be due to external or to internal factors, may be physical or not, may have been anticipated or not, and may affect motor, situational or rational control. Depending on their nature, resistance to perturbating factors can require either physical or mental effort. For instance, lifting a heavy box requires physical effort, reading in a noisy environment requires concentration, and inhibiting a prepotent but inappropriate response requires mental effort. When the effect of perturbating factors has been anticipated (I know that the box is heavier than it looks, that I am in England and should drive on the left side of the road, that solving this problem is difficult and requires concentration), the amount of force or the attentional resources needed are preprogrammed and would be part of our awareness of the content of our intention immediately prior to action. But when these disturbances are unexpected, the sense that one has to exert control would have its origins in signals indicating a discrepancy between predicted and actual state and in the corrections and adjustments these signals would trigger" (Pacherie, 2008, p. 199, my emphasis).

The feeling of effort is neither merely the experience that I'm failing, nor is it merely the experience that I exert some control in return. The feeling of effort is, rather, the feeling that *I have to* do something to correct the fact that my action is not going smoothly towards successful performance. I suggest we express it as the feeling of *having to do more* or *having to do a lot*. I use the expression "having to *do a lot*" because it can apply both to physical action (I have to exert a lot of force, to invest a lot of energy) and mental action (I have to exercise a lot of attention, a lot of control, a lot of executive functions). It is

also neutral concerning a crucial question, which is whether it is the sense of having to increase the deployment of one capacity (I have to exercise *more* control), or if it is the sense of having to start deploying a specific and new capacity (I have to exercise *control*). We could also frame it in terms of having to *try harder*.

Now, the expression "having to" is ambiguous. On the one hand, there is a meaning of "having to do" that does not entail agency from the agent. In this non-agentive sense, the feeling of "having to do more" is merely the experience that, if I *wanted* to perform a certain action successfully, I *would* have to do more –just like a pole jumper who, after a failed attempt, says to herself "I have to do more" but is yet to try again. On the other hand, there is an agency-entailing meaning of "having to do more". In this acceptance, it is the experience that I am doing something. It is the experience that I am acting and that I *need* to do more if I want to succeed; or the experience that I am acting and that I *am* doing more right now. The meaning of "having-to-do-more" is clearly agentive here. The CM tries to understand the sense of agency. It would be absurd to maintain that the feeling of "having to do more" is a non-agentive feeling.

So, let's accept that the feeling of effort is the feeling that I have to do a lot to succeed, that I have to do more (than expected, than usually…). Now, what is it for an action to be performed with this feeling that "I have to do more, to try harder"? It seems to be the experience that the action is difficult for me. In other words, I suggest that the CM is in fact proposing an account of difficulty, where difficulty refers to the fact that a certain action generates (for some reason) the feeling that the agent has to do a lot. According to this proposal, an effort is an action accompanied by the feeling of effort, which is the feeling that it is difficult for me, which is the feeling that I have to do a lot.

5.1.4. The Difficulty-Based View (*6th definition*)

An effort is a difficult action, and a difficult action is an action that generates, and is performed with, the feeling of effort. The feeling of effort, in this context, may be better characterized as a noetic feeling: a feeling indicating something about my competence in regard to the action that I'm trying to perform. To use simple words: the feeling of effort is the feeling that the action (that I'm performing right now) is difficult for me. Let me justify and clarify this proposal.

I) Feelings of Efficacy and Effort

The reason why I identify the CM account of effort with a difficult-based account is because it fits well with the distinction, made by the CM, between the feeling of effort and the feeling of efficacy. The CM is primarily interested in understanding the sense of agency that an agent has or lacks over her actions. In this context, it assumes that there is a phenomenal dichotomy between *feeling in control* (the feeling of efficacy) and feeling *that I have to exert control* (the feeling of effort). Both can contribute to the sense of agency, albeit in opposite ways. The feeling of efficacy presents our actions to us as being under our control and the world as gently conforming to our intentions. When it comes to physical agency, the more the actual sensory consequences of the agent's movements match the predicted ones, the more the agent feels in control and experiences a feeling of efficacy. But inversely, the greater the mismatch between centrally generated sensory predictions and actual sensory feedback, the less the agent feels in control and the more intense the feeling of effort. In this perspective, the feeling of effort seems to be saying: "Your action will fail if you continue like that. Do more, focus more." In this perspective, the feeling of effort might be seen as a motivating feeling: a feeling which, if experienced, motivates the agent to do more, to pay more attention, to exert more force. So, the feelings of efficacy and effort contribute in opposite manners to the sense of agency.

> "They seem to make rather different contributions to the sense of agency. […] We typically experience a feeling of effortless control when we achieve a perfect match between action and goal without having to go through corrections or adjustments. So in a way our sense of agency is heightened since the performed action fully conforms to our intention. Yet, at the same time, in such actions we meet with no resistance, either internal or external, and do not experience the kind of contrast between what we want and what the world will allow that would sharpen our sense of self. In contrast, in actions where we meet with resistance and have to overcome perturbations, the actual consequences of our actions do not match our predictions perfectly and in that respect we don't feel that what we did was exactly what we wanted to do. Yet, at the same time, our awareness of the efforts we have to make to try and keep the action on track heighten our sense that we are indeed engaged in action." (Pacherie, 2008, p. 188)

II) Feelings of Efficacy and Effort as Noetic Feelings

The comparator model contrasts the feeling of effort with the feeling of efficacy. In this perspective, both experiences could be conceived as noetic feelings. The concept of noetic feeling refers primarily to feelings that indicate some information about the agent's own states during the performance of cognitive operations. They indicate something to the agent about the course of something that she is trying to achieve (Dokic, 2012; Vazard & Audrin, 2022). Feelings of confusion, certainty, familiarity, feelings of knowing or tip-of-the-tongue are often conceived as noetic feelings. They implicitly or explicitly indicate to the conscious agent how some first-order action is going. For instance, the feeling of tip-of-the-tongue indicates to the conscious agent that although she doesn't find the answer that she is looking for right now, she probably has the answer in storage somewhere in her cognitive apparatus. The feeling of confusion, to use another example, has been conceived has a feeling that

> "results from a tracking of one's own cognitive activities as they unfold to process a given content or resolve a certain problem [and] provide us with information on the unfolding of our cognitive activities. [Namely,] While the feeling of knowing signals that such cognitive achievement has taken place and therefore that one now securely possesses the desired information, […] the feeling of confusion signals that one has not reached the desire mental state; that cognitive operations have not yet delivered an output that qualifies as understanding [success, that is]". (Vazard & Audrin, 2022, p. 764)

A possible development for the comparator model is to understand feelings of efficacy and effort as noetic feelings indicating something about the competence of the agent with respect to the (bodily or mental) action that she is performing. Or, in a more relational and less strictly noetic perspective, they can be described as feelings that indicate something to the agent concerning the *relation* between a specific action and her capacities with respect to that action. The feeling of efficacy, arguably, indicates to the agent, first that her action is going smoothly, that there is no internal or external obstacle, but also and at the same time, that she has sufficient capacities to perform the action easily. Conversely, the feeling of effort would indicate not only that the action is not going smoothly, but also that the agent doesn't have the adequate capacities to do it smoothly. Hence the suggestion that the feeling of effort says something such as "focus, do more, invest yourself more". It tells the agent that she cannot lose focus if she is to succeed. This would go along well with the competence-based view of noetic feeling (Dokic, 2012). According to the competence view, noetic feelings indicate to the agent (in a procedural

fashion) the chances of success in a given (cognitive or physical) task.[61] They are experienced as feelings that I can do or that I can't do a certain task, or that I can or can't do it easily. The feeling of effort is the feeling that I can't do easily whatever it is that I'm trying to do right now.

III) The Difficulty-Based Approach to Effort and the Comparator Model

The comparator model, or so it is my suggestion, portrays the feeling of effort as the noetic feeling that a certain action is difficult to me. From the representational view of the feeling of effort, it follows that an effort is a difficult action for the agent. Conversely, the feeling of efficacy indicates that the action I'm doing is easy for me and my skills. Now, important remarks are in order. First, the difficulty-based view raises the question of what makes it the case that a given action generates the feeling of effort. That is, it raises the question of what makes it the case that the action is difficult for me or, inversely, that the action is easy for me. Multiple explanations might be available: it might be the presence of some mental or physical resistance, it could be the fact that I have to use a specific capacity (self-control, for instance), it may be the fact that I have to use some capacity above a certain threshold (I have to exert, for instance, a huge amount of my physical power), it could be that I didn't anticipate some perturbating factors, etc.

Second, the CM conceives difficulty in phenomenal, subjectivist terms. The CM's account amounts to a phenomenology-based account of difficulty because it suggests that an action is difficult when it *feels* difficult, this feeling being proximally caused by error signals. But one could opt for a distinct account of difficulty. For instance, one could argue that a difficult action is an action that the agent finds aversive. It should also be noted that this phenomenalist view of difficulty doesn't preclude the possibility of there being another, non-phenomenal sense of difficulty. Finally, it is possible that I made the comparator model said more than it actually says. But in accordance with my general methodology, I had to try to unravel its definition of effort, which is not explicit.

[61] Noetic feelings can be conceived in procedural terms or in metarepresentational terms. In procedural terms, noetic feelings are conceived as implicit information about the state of one's first-order actions. Procedural metacognition is usually believed to be accessible to non-human animals lacking the capacity to form second-order thoughts about first-order thoughts. But if noetic feelings were metarepresentational, their experience would require the capacity to explicitly form metarepresentation, like in evaluating the validity of a given theory or argument. In this perceptive, noetic feelings are akin to beliefs about beliefs, to 2nd order thoughts.

(vii) The difficulty-based definition: an effort is a difficult action

- Making an effort is, for an agent, to perform an action with the feeling that it is difficult for her (according to the comparator model, that she has to do a lot to perform it successfully).

5.2. Cognitive Control: the Feeling of Doing Too Much

Introduction. The last theory of the feeling of effort we have to analyse derives from the cognitive control research program. I shall first present the program (5.2.1.) before moving to its theory of the feeling of effort (5.2.2.) and finally to its theory of effort (5.2.3.). Broadly speaking, control refers to the performance of a specific type of mental action; namely, control actions, and the sense of effort is the conscious experience generated by signals indicating that the control actions currently performed by the agent are too costly in evolutive functional terms. In everyday language, we could approximate the proposal by saying that cognitive control is voluntary attention or concentration and that the feeling of effort is the unpleasant feeling generated by too much voluntary attention. The evolved functional role of the feeling of effort is to motivate the agent to stop investing that much control. The feeling of effort fulfils this functional role by its unpleasant phenomenality: since it is unpleasant, it naturally motivates the agent to stop. The rationale for this account is, first, that control is a limited resource and, second, that limited resources obey some preservation principle, since they are important for survival. The definition of effort hereby entailed is tangled between two options. One option is that mental effort just is the exercise of mental control. Another option is that mental effort is the exercise of mental control above a certain threshold –namely, only if it generates the unpleasant feeling of mental effort.

5.2.1. Cognitive Control

The background to the cognitive control model is the "dual-process" view of reasoning (Evans, 2008; Hasher & Zacks, 1979; Kahneman, 2011; Schneider & Shiffrin, 1977), according to which, information processing is characterized by a discrete or gradual distinction between two types of reasoning. This view assumes that the brain can treat information in two different ways: one system treats it (more) automatically, unconsciously, rapidly, and effortlessly; the other system treats it (more) consciously and effortfully. Cognitive control is "a set of mechanisms" belonging to the second system, whose function is to enable goal-congruent behavior during conflict tasks, or during goal-directed behavior more generally.[62]

[62] It is unclear whether cognitive control is only used to produce goal-directed behaviour in conflict tasks and situations, or if it is used for a broader range of teleological behaviours. One of the most detailed empirical account so far (Shenhav et al., 2013, p. 220) suggests the second option as "conflict is just one among many signals that can indicate the need to adjust intensity [with cognitive control]. Others include response delays, errors, negative feedback, and the sensation of pain."

Conflict tasks refer to laboratory experiments where participants, in order to comply with the instructor's demand (goal), need to inhibit some prepotent, automatic default response. The classic experiment is the Stroop task (Stroop, 1935) wherein participants must read out words referring to colors that are painted in a certain color ink. In incongruent trials, the word content and the ink color do not match (for instance, "green", if written in yellow ink) and participants take longer to respond. This delayed response time is interpreted as the sign that some (cognitive or mental) control has been used to inhibit the spontaneous prepotent default response, which is to name the color of the ink. Thus, 'cognitive control' refers to the set of processes whose function is to inhibit such default responses; that is, it refers to the neurocognitive mechanisms of control that an agent exerts to inhibit some automatic responses in order to act goal-congruently.

Now, mental control ("control action") needs to be deployed when automatic reactions ("default responses") elicited by a given environmental situation are incompatible with the agent's current goal. By default, mental control functions automatically (subpersonnally, and unconsciously). A subpersonal neurocognitive mechanism (the "selector") determines whether a control action should be performed, and what type of control action should be performed: it selects the type of mental control that should be deployed, whether it should be deployed, and for how long.[63] By default, the selecting mechanism works subpersonnally and unconsciously, but if the selector finds that there is an expected (and expensive) cost to deploying mental control, it generates a conscious and qualitative signal for the agent to change strategy or give up the task: the feeling of mental effort.[64]

5.2.2. The Unpleasantness of the Feeling of Mental Effort

The feeling of effort is realized, at the neurophysiological level, by cost signals, which indicate that the cost of deploying mental control is too expensive. "Too expensive" is to be understood in functional and computational terms: the brain, as a result of evolution, estimates that investing control at a certain intensity and over a certain time span is not an optimal way to allocate resource. Prima facie, this is puzzling. The phenomenal color of feelings is generally admitted to match their interest for functional

[63] These two functions – selecting the most efficacious control action and deciding whether it is justified to implement it – are, however, not always clearly distinguished.

[64] Two remarks need to be made. First, costs are expected costs; that is, costs that are expected to be associated with the deployment of control, and not actual costs. Second, the conditions in which the feeling of mental effort is generated are not entirely specified. It is unclear whether it is generated (a) if there is an expected cost (in which case the feeling of effort would accompany any deployment of control since control is costly), (b) if the cost exceeds the expected benefits, or (c) if the cost exceeds the expected benefits above a given threshold.

adaptation in terms of evolution. Sexe feels good because it increases the survival chance of a species; hunger feels bad because it decreases the chance of survival of the individual if she does nothing to remediate this feeling. Mental control is highly beneficial in various ways. So why would the experience of investing a lot of mental control generate an unpleasant feeling? The answer to that puzzle simply is the difference between the "modern world" and the context of development of evolved mechanisms. The context in which the brain evolved has little to do with contemporary social life. Consequently, it made sense to minimize the allocation of mental control "back then", so as to keep it for crucial moments.

Now, what is the experiential content of the feeling of effort at a non-reductionist level? The cognitive control theory identifies the feeling of effort with an unpleasant motivating feeling. It is a feeling that motivates to do less. It motivates to give up what the agent is doing, or to find another way to do it. The feeling of effort is, at the conscious level, the experience that it is unpleasant to invest mental control, it is the experience of a mental action that is no longer sustainable without sweat and tears, one might say. At the subpersonal level, it is realized by cost signals. Cost signals are signals for the brain that the ongoing action will soon become too costly. Thus, the feeling of effort is realized by *expected costs*.

Realizers. But this raises a worry. The feeling of effort seems to be a present-orientated feeling, the feeling of something that is currently occurring (that the agent is currently doing). But it is described as a future-orientated feeling by the cognitive control theory. A possible solution is to distinguish the intentional object of experience from its realizers –the conscious level from the neurophysiological level. During effort, *I* experience what I'm doing right now as being too costly right now. But this experience that I have right now is realized by the fact that my brain is receiving signals that the action will become too costly if it continues. An effort is an action which is too costly right now for the agent; but what makes the agent experiences an action as too costly right now is that, for the brain, this action will become too costly. This solution preserves the plausible intuition that the feeling of effort is present-oriented.[65] Thus, the feeling of effort would be the experience of a too costly mental action, an experience realized by cost signals (signals of an expected costs for the brain). The feeling of effort would be the experience of deploying too much cognitive control. If the feeling of mental effort is the experience of a control action with a too expensive cost, it entails that mental effort is too costly

[65]However, it prevents the identification of the agent's conscious experience to the neurophysiological processes that make the experience possible. This might come as a heavy price for the defenders of the cognitive control theory, who lean towards a reductionist approach.

cognitive control. The feeling of mental effort is the intentional experience of deploying too much cognitive control.

Difficulty. There is however a tension between two possible views. We should clearly distinguish the view that effort is cognitive control from the view that effort is *too costly* cognitive control. The idea that effort is cognitive control is defended, or at least strongly suggested by Kurzban (2016). Making a mental effort is exercising cognitive control, in order to manage problematic automatic reactions. He identifies mental effort with cognitive control (that is, with control actions), and the feeling of mental effort with the conscious and qualitative perception of mental effort. Now, I think that the identification of mental effort with cognitive control simpliciter is problematic for the theory. We should rather identify mental effort with too costly cognitive control. But it is not entirely clear whether, according to these researchers, the feeling of mental effort is the feeling of costly control actions or too costly control action. Still, the latter seems the more plausible option, for two reasons. First, if the feeling of effort represents costly actions simpliciter, it should accompany all control actions because control actions are essentially costly. But it does not. Only some cognitive control actions are experienced as effortful. Second, while the feeling of effort is essentially unpleasant, the feeling of cognitive control is not.

On the one hand, there is a question as to whether the feeling of mental effort necessarily accompanies the deployment of control actions. Researchers are yet to clarify this question. But they tend to claim that cognitive control is not necessarily unpleasant while the feeling of mental effort is. The feeling of mental effort is necessarily experienced while cognitive control may not be, the feeling of mental effort does not accompany all control actions. For instance, Westbrook and Braver (2015) have refused to identify mental effort and cognitive control because it would entail that there are unfelt mental efforts. Their argument is that cognitive control is not always experienced as effortful, whereas mental effort is necessarily experienced. Therefore, cognitive control is not mental effort.

Second, one may have an experience of cognitive control that is not unpleasant whereas the experience of mental effort necessarily is unpleasant. Indeed, it is clear that (for the theory) the feeling of mental effort has a phenomenal quality. It is qualitatively negative and it "commands" one to give up the task or to switch strategy. But if the feeling of effort is a conscious and qualitatively negative experience, cognitive control is itself neither necessarily conscious nor, if experienced, necessarily negative. Now, some researchers tend to also say that the feeling of effort may not be necessarily unpleasant (Inzlicht et al., 2018; Kurzban et al., 2013; Shenhav et al., 2013, 2017). But they might be conflating the feeling of mental effort with the feeling of cognitive control.

What is more, the negativity (unpleasantness) of the feeling of mental effort is essential to its functional role. Indeed, the unpleasantness of the feeling of mental effort is related to its functional role as its negative quality motivates one to switch to another control action, if not to give up control

altogether, in the context of a general assumption, according to which, phenomenological experiences play a functional role by motivating organisms towards a certain behavioral trajectory (Schwarz and Clore, 2007). The imperative profile of the feeling of mental effort is, however, not entirely specified; it is unclear whether it motivates one to switch to another control action or to simply give up control.

Summing up, the cognitive control theory identifies the feeling of effort with an unpleasant motivating feeling. It is a feeling that motivates to do less. It motivates to give up what the agent is doing, or to find another way to do it. The feeling of effort is, at the conscious level, the experience that investing cognitive control is unpleasant. At the subpersonal level, it is realized cost signals. Cost signals are signals for the brain that the ongoing action is, or will soon become, too costly. Thus, the definition of effort that fits best with the cognitive control framework is that it consists in the unpleasant feeling of a too costly action.

> The cognitivist view of the sense of effort: the sense of effort is the conscious unpleasant experience of investing too much cognitive control, an experience which is realized by cost signals (signals from the brain to alert the agent in phenomenal terms that the control action is becoming too costly in terms of optimal resource allocation).
>
> The cognitivist view of effort: an effort is a (too costly) control action.

5.2.3. The Control-Based View (7th definition)

Researchers have, thus, linked effort to cognitive control in recent years. The recent theory of cognitive control has proposed that the feeling of mental effort is the specific conscious and qualitative aversive experience representing the cost of exercising cognitive control. It identifies mental effort with the exercise of cognitive control. More precisely, the most coherent proposal is to say that the cognitive control research program identifies mental effort with the too-costly exercise of cognitive control. Feeling mental effort is experiencing the overly cost (in terms of evolutive adaptation) of exercising control; an aversive signal sent to the agent so that she gives up her initial decision or finds a better way to exercise cognitive control.

In fact, if we overlook for one moment the empirical details of the theory, the cognitive control research program suggests a broader *control-based view of effort*. Here, "control" refers to mental control but also to self-control. Clearly, the nature of self-control is a debated topic. Self-control has now become a commonplace, at least as an explanandum. For instance, in 2010, 3% of published articles in

psychology had "self-control" as a keyword (Duckworth, 2011). Proponents of the cognitive control research program believes that self-control just is cognitive control ultimately (Sripada, 2021). It is clear that many believe effort and self-control are related.

For instance, Holton argues for his account of willpower against the rival humean account on the ground that, if humeans were corrects, it would be possible to exercise self-control without effort. But, according to Holton, self-control essentially takes effort: in exercises of self-control "it typically feels as though there is a *struggle*. One maintains one's resolution by dint of effort in the face of the contrary desire" (Holton, 2009, 118). For instance, the Ego Depletion Model (Baumeister et al., 1998; Vohs and Baumeister, 2017) assumes that effort and self-regulation are related. Its proponents circumscribe their explanandum by saying that they want to understand *effortful* self-regulation only, and that they remain neutral on the question as to whether effortless self-regulation is possible. Here again, effort and self-control entertain some privileged relation.

Effort and self-control thus seem to have some relation, to the extent that many researchers have connected the two. How can we capture the definition of effort underlined by the writings of those who assume a close connection between effort and self-control? We can say that, according to the control-based view of effort, making an effort is controlling "oneself". According to the cognitive control research program, controlling oneself means exercising the executive capacity to inhibit some spontaneous response pulse. According to the ego-depletion view, it means investing some ego-resource to self-regulate. According to Holton, it means exercising a specific will-power capacity, the capacity to enforce a special form of intentions which are resolutions. The control-based theory of effort identifies efforts with attempt to control oneself. Let me emphasis the fact that the "control-based theory" is an attempt on my part to capture an idea that we find in several contexts. The general idea is that effort is essentially related to control.

(viii) The Control-based definition: an effort is an *action of control*.

- Making an effort is, for an agent, intentionally controlling herself.

5.2.4. Conclusion: What is Mental Effort?

The cognitive control research program and the comparator model offer two characterisations of mental effort through the lenses of the neurophysiology of its feeling. They raise two different questions. (i) First, although their definitions of effort are not entirely clear, they strongly suggest that effort essentially comes with some phenomenology: it seems that the feeling of mental effort is essential to mental effort. The comparator model suggests that an effort is an action that the agent performs with the feeling that it is difficult for her, that is, with the feeling that she has to exert a lot of physical energy or mental control. The cognitive control research program does not explicitly specify whether mental effort just is the deployment of cognitive control, or if cognitive control only constitutes a mental effort if its deployment generates the unpleasant feeling that motivates the agent to stop deploying control. But the emphasis on the feeling of mental effort suggests that investing cognitive control only becomes a genuine effort when it is felt. (ii) Secondly, it is not entirely clear how we should unify the two accounts and whether it is possible. The comparator model depicts the phenomenology of effort as the feeling that I need to do a lot, and it may motivate me to increase my engagement. But when it comes to the cognitive control research program, it is rather the feeling that I need to do less, that I am doing too much, and it clearly motivates me to decrease my engagement, if not simply to give up. That said, there could be room for a unified view to the extent that "feeling that I do a lot" is not that far from "feeling that I do too much". The challenge, however, comes from the fact that while the cognitive control model clearly mentions the unpleasantness of the feeling of mental effort, the comparator model does not. To conclude, the nature of mental effort needs to be clarified and the question as to whether the feeling of effort is essential to effort must be addressed.

6. The Puzzles of Effort

The goal of this second part was to capture the differentia of effort, that is, the specific property that turns actions into efforts or effortful actions. To that effect, I have investigated several bodies of research in science and philosophy in order to retrieve usual definitions of effort and conceptions of its differentia. So, what is the differentia of effort: what does the concept of effort specifically indicate about agency? (i) First, does effort refer to physical agency, or to mental agency? Does effort simply refer to the attempt to move the body, to the voluntary exercise of the body, to the inertial resistance of the body to the will? Is effort fundamentally physical, or does it rather purport to mental agency? If so, is it simply the performance of mental, cognitive control? Is it the performance of cognitive control accompanied by an unpleasant feeling motivating the agent to stop investing control? All these options reduce effort either to a mental act, or to a physical act. (ii) But should we reduce effort to either one of the two: couldn't effort refer both to mental and physical agency? Isn't it simply an action where the agent has to mobilize some capacity above a certain threshold, whether it is a mental or physical capacity? Or is it a physical or mental action that she performs with the noetic feeling that it is difficult for her? (iii) These options do not reduce efforts to either mental or physical agency. But they still reduce effort to a specific region of agency. But aren't we going off-track when we want to reduce effort to a subset of goal-directed actions? Isn't the concept of effort rather a specific way to look at all actions, to denote certain aspects of agency such as its costliness or its underlying "persevering" structure? So, what does it take for an action to be effortful? To which region of agency does effort refer? The investigation led out during this second part reveals several possible and apparently incompatible answers to that question. In fact, it introduced so many proposals that the unity of the concept "effort" simply seems to be vanishing.

In this conclusive chapter, I summarize the inquiry of effort's differentia and raise four puzzles. The first section (6.1.) summarizes the different definitions of effort, and the different characterizations of its feeling, that I have identified. I also justify the hidden assumption that efforts are goal-directed actions. During the second section (6.2.), I draw the consequences of the inquiry as I identify four puzzles about effort, its phenomenology and its place in agency. In interrogative terms, the puzzles are the following. First, is effort an action or the property of an action? Second, are all actions effortful? Third, are all efforts felt? Fourth, are there species of effort? These questions generate puzzles because the inquiry has revealed antinomic answers to each question.

6.1. Summary of the Inquiry

In this summary, I put emphasis on the numericity of implicit definitions of effort (6.1.1.) but also on the incompatibility between several descriptions of its phenomenology (6.1.2.). I use this conclusive sub-section to justify what has been a hidden premise so far, which is the premise that efforts are teleological actions (6.1.3.)

6.1.1. Key Definitions of Effort

I have identified several (more or less) implicit definitions. I summarize them in one place just below. Three remarks are in order. First, I give two formulations for each definition. For indeed, we can either describe efforts in terms of what an *agent* is doing; or we can describe efforts in terms of what *actions* they are. When we define efforts in terms of what an agent is doing, we obtain a verbal-based definition of the form "making an effort is, for an agent, to F". We can also reformulate it in terms of "acting effortfully is, for an agent, to F". When we describe efforts in terms of what actions there are, we obtain adverbial modification-based definitions of the form "an effort is an action X", where X is effort's differentia, namely, a property or predicate like costliness, aversiveness, resistance, failure, control, etc. We can also reformulate it in terms of "an effortful action is an action X". I mention the fact that we can replace the expression "making an effort" by the expression "acting effortfully" (or "effort" by "effortful action) because I remain neutral, at least for the time being, regarding the debate between the identity view and the property view of effort (more on that soon). Third, some definitions are relatively close. Some may be more fundamental than others, while some may be specifications of more general definitions. For instance, Biran's resistance-based view and the exercise-based view (that is, the amended peripheralist view) are extensionally very close to the volitional definition of effort, since they all roughly characterize effort as an attempt to move one's body. They can be seen as specifications of the basic volitional view.

(i) **The Conatus-Based View of Effort**: an effort is the substance of an action, that is, the attempt to increase one's power (to "persevere in one's being"), which is the underlying attempt behind the apparent action.

- Making an effort is, for the agent, to try to increase her power.

(i) **The Investment-based definition**: an effort is a *costly action*.

- Making an effort is, for an agent, to teleologically invest some limited resources.

(ii) **The Aversion-based definition**: an effort is an *aversive action to perform*.

- Making an effort is, for an agent, trying to perform an action she is averse to perform.

(iii) **The Volitional definition**: an effort is a *volitional action.*

- Making an effort is, for an agent, trying to move her body.

(iv) **The Resistance-based version**: an effort is an attempt to move one's body, that is, an attempt to overcome the resistance of the body to its being moved.

- Making an effort is, for an agent, trying to overcome the resistance of the body to its being moved.

(v) **The Exercise-based version**: an effort is a *voluntary exertion*.

- Making an effort is, for an agent, to teleologically exercise her body.

(vi) **The difficulty-based definition**: an effort is a *difficult action,* that is, an action performed with the feeling that the agent has to do a lot to perform it successfully.

- Making an effort is, for an agent, to perform a difficult action.

(vii) **The Control-based definition**: an effort is an *action of control* (if it is accompanied by the unpleasant feeling of mental effort).

- Making an effort is, for an agent, intentionally controlling herself (if it generates the unpleasant feeling of mental effort).

6.1.2. Key Characterizations of the Feeling of Effort

In addition to these definitions of efforts, it is important to note that there is also disagreement concerning the phenomenological characteristics of the awareness of effort. I summarize these disagreements in the table on the next page. While peripheralism and centralism are interested in the sense of physical effort, the comparator model and the cognitive control theory are interested in the feeling of mental effort.

Points of divergence \ Theories	Peripheralism	Centralism	Comparator Model	Cognitive Control
Neurophysiological realizers	Afference signals	Efference signals	Error\mismatch signals	Cost signals
Experiential content ***(***Intentional object for the conscious agent***)***	*Bodily activation* (muscular tension for the narrow version, also cardiovascular and respiratory activity for the broad version)	*Trying to move*	*Difficulty* (the action is difficult for me)	*Controlling too much*
Phenomenality *i) valence*	Neutral	Neutral	Negative?	Negative
ii) imperative character	None	None	"Do more!" ?	"Do less!"
Definition of effort	An effort is a muscular contraction. *(rejected)* An effort is a voluntary muscular contraction.[66] *(amended)* *(= an exercise-based view)*	An effort is, for an agent, an attempt to move her body. *(the volitional view*)	An effort is an action made with the feeling that it is difficult for me (= a subjectivist *difficulty-based view*)	An effort is a (too costly) mental action of control. (= a *control-based view*)

[66] The amended peripheralist view just is the exercise-based view of effort.

6.1.2. Remark on the Teleology of Effort

Efforts are "actions + a specific difference". Now, this question needs to be refined because it masks a difference between two slightly different questions. Indeed, are efforts mere actions (the causation of a change by an agent) or teleological actions (the causation of a change by an agent *in order to* reach a goal)? Is effort-making available to agents with the capacity to act teleologically only; or is it also available to more basic agents who lack such a capacity? I defend the view that efforts are teleological. Consequently, efforts are "actions + a telos + some specific difference".

I shall quickly motivate the claim that efforts are teleological actions, which has been implicit throughout the inquiry. Indeed, one could object that we use "effort" to describe non-teleological actions and, consequently, that we should not restrict efforts to teleological beings. Indeed, it is true that we tend to attribute the capacity to make efforts to non-teleological agents. In an engineering context for instance, it can be said that a roof makes an effort on the walls that support it, in virtue of the fact that its downward pressure is resisted by the material structure of the walls ("effort trenchant" in French; "shearing force" in English). We may say that the ice resists being melted by the sun, or that an artifact fulfils its function effortlessly or with great effort. Those who endorse the investment-based view may say that a certain physical system makes an effort in virtue of depleting its limited fuel, physical or physiological resources. Thus, it is true that we use "effort" to describe the actions of non-teleological agents; "effort" does sometimes refer to non-teleological actions.

However, I maintain that efforts are necessarily goal-directed actions. We can explain our tendency to describe non-teleological actions as efforts and maintain that efforts are essentially goal-directed. First, the aforementioned speech habits could display a *projective* use of "effort". According to the projective perspective, non-teleological agents do not make effort genuinely, but we happen to describe them *as if* they were pursuing goals. The attribution of effort to non-teleological agents is justified in terms of linguistic habits, not substantially. The projective reading is compatible with the teleological view of efforts because it presupposes that efforts are teleological actions after all.

Second, we may say that non-teleological agents make efforts because we think that said agents are in fact capable of teleological actions. According to the *animist* option, things like seas, electro, roofs and planets can make effort because they do manifest their power in order to reach some goal. The animist option makes sense of the attribution of effort to intuitively non-teleological agents by maintaining that these agents do act teleologically after all. Overall, there are good reasons to maintain that efforts are goal-directed actions, for seemingly non-teleological perspectives on effort are compatible with teleological agentivism. What is more, the resistance-based view justifies the restriction of efforts to

teleological agency by the fact that resistance requires teleology. Something resists, only insofar as one has a goal that one tries to reach, or so I will explain.

Teleological agentivism: efforts are goal-directed actions.

Projection: efforts are goal-directed actions, but the concept of effort can also be used to describe non teleological actions.

Animism: efforts are teleological actions, but all agents can act teleologically, therefore all agents can make effort.

6.2. The "Little Antinomies of Effort"

The Aristotelian definitional methodology operates through specification. We first identity a general category, then we look for a term that specifies the general category in some way. Effort refers to teleological agency. But the question is: how does "effort" specify "agency"? What do we mean, what do we refer to, when we describe some agentive event as an effort, or as effortful? My strategy was to identity usual definitions of effort in order to understand how *effort* specifies *agency*. The result of the inquiry is that there is no consensus about the nature of effort and about the nature of its feeling. Consequently, the consequence for the Aristotelian specificatory strategy is that, at this point, there is no clear understanding of the space that we should give to efforts in agency. In fact, there are four structuring puzzles behind the variety of proposals about the nature of effort and its role in agency: what I shall call the "little antinomies of effort".[67] I will introduce them in turn. (6.2.1.) The first puzzle regards the sense in which one particular action is an effort. So far, I have suggested that an effort is an action, but one may prefer to conceive effort as a property of action. (6.2.2.) The second puzzle concerns the type-relation between efforts and actions: are all actions effortful, or is it only the case of some actions? (6.2.3.) The third puzzle concerns the phenomenology of effort: is the feeling of effort essential to effort? (6.2.4.). The fourth puzzle concerns the unity of effort: is effort a non-dividable concept, or can we divide effort into different species of effort?

6.2.1. First Puzzle: What is it for an Action to Be an Effort?

Efforts belong to the general category of actions, but there are several ways for something to belong to a category; there are several ways for something *A* to be something *B*. The general category to which efforts belong is agency; effort is on the agentive side. But the meaning of "being" in this last sentence is vague, for there are different ways in which efforts can belong to agency. To clarify the meaning of the proposal that "efforts are action", we need to begin by distinguishing three layers in that question, and three levels of answers thereof. First, there is the question whether it is true that, at a generic level, all actions are efforts. This is the type-question: if all efforts are actions, is it the case that all actions are efforts? Can there be no effort in agency? Second, the type-question can be refined into a species question. It is the question whether it is true that, at a more specific level, all actions of a certain kind

[67] They are "little", in contrast to the more serious ones that Kant identifies; and because the existence of metaphysics is not at stake here.

(for instance, physical actions) are efforts. Third, there is the question of the exact meaning of "being" in the proposal that one particular action is an effort: considering one particular action that is an effort, in what sense *is* it an effort? Is the effort identical to the action, or is it rather a property modifying the action? This is what I call the token-puzzle, that this subsection introduces.

The question concerns the exact nature of the sense in which one particular action is an effort. This question is the most ontologically basic. For instance, if you believe that all physical actions are efforts, you still need to account for the sense in which all physical actions *are* efforts. This most basic question is thus essentially the question of the nature of the meaning of "being" in the proposals that (all or some) actions are efforts: what does it mean for an action to be an effort? There are two options. According to the *identity claim*, the sense in which an effort is an action is identity. An action that is an effort just is an effort, the effort and the action have all their properties, and only them, in common. On the other hand, according to the *property claim*, an effort is not stricto sensu an action, but rather a modifying property of an action. In terms of vocabulary, the identity claim is better expressed by the count use of effort (an effort), which is itself paradigmatically expressed by the expression *making an effort*. The property claim is better expressed by the mass use of effort (effortful), whose paradigmatic expressions could be *acting effortfully*.[68]

> Identity view: for an action to be an effort, is for that particular action to be identical with that particular effort.
>
> Property view: for an action to be an effort, is for that particular action to have the property of being effortful.

First, it is important to note that both views are compatible with agentivism. Both conceive effort as a *specification of agency*. Indeed, each option maintains that the concept of effort specifies the concept of agency, whether it is by referring to actions having some effortfulness-property, or whether it is by referring to actions being identical with efforts in virtue of having some property. Whether effort specifies agency in the sense of being a specific subset of actions, or whether effort specifies agency in the sense of referring to actions that have a specific property, effort refers to agency in both cases. Second, it is also important to note that there is a puzzle at stake here because there is no clear support in favour of either option. Indeed, almost all accounts can be stated in both ways. It is possible to state

[68] My gratitude goes to Richard Holton, to whom I owe this analysis, as well as to Cyrille Michon and Olivier Massin, for the discussion of this whole point that I didn't perceive initially.

most definitions of effort in a satisfying way and yet to leave opened the debate between effort-as-a-specific-action and effort-as-a-property-of-an-action. To illustrate, consider the difficulty-based view of effort. In terms of identity, it is the view that an effort is a *difficult action* (making an effort is doing a difficult action). In terms of property, it is the view that acting effortfully is *acting with difficulty* (acting effortfully is acting with difficulty). Ordinary language does not suggest a strong preference, or so it seems to me.

That being said, we shouldn't overlook the fact that there is a fundamental dispute here. An action is an effort (following the identity view), or is effortful (following the property view), if it has some specific property. But for the identity view, the specific property of an action that is an effort is not effort, since effort is the action. Effort cannot be the property that turns an action into an effort, since effort is precisely the action that results from the addition of a property (eg., difficulty or resistance) to the initial action. According to the property view on the other hand, "effort" is the specific property that makes an action effortful. That is, to say it a grammatically correct way, *effortfulness* is the property that turns actions into effortful actions according to the property view –effort is effortfulness, it is a property. The fundamental ontological question at stake here, is whether the concept "effort" should be conceived as a proper action (*effort*, properly speaking) or as a property (*effortfulness*, properly speaking). The question is whether effort is *effort* (an action) or *effortfulness* (a property). Now that the dispute has been spotted, we can leave it aside for the time being.[69]

6.2.2. Second Puzzle: Is Every Action an Effort?

The second question is whether all actions are efforts (or effortful) or not. Indeed, there can be two types of relation between the set of actions and the set of efforts. Namely, either all actions are (or take) efforts, or only some actions take (or are) efforts.

[69] I will come back to this question on two occasions: first, when I defend the resistance-based account of mental effort ("effort of will"), during the third part; second, when I defend the formal "agonistic" resistance-based account of efforts, during the fourth part. On each occasion I will defend the identity view, but with two different arguments. With respect to the former, I will argue that those actions that *require* an effort of will precisely require a sui-generis action, which *is* the effort of will itself: an attempt to overcome a temptation, constituted by the exercise of a specific capacity (such as self-control), in order to bring about a specific goal (the *overcoming* of the temptation). With respect to the latter, in the fourth part, I will argue that we should conceive efforts as full-blown actions with a specific end if we want to capture what I call their specific *agonistic* function in agency. Their *agonistic* function is to compete with resistive powers in order to overcome them, that is, to modify the (momentary or long-term) organization of the causal powers in our environment, so that we carve it to our will. Efforts have a specific end, which is to produce a causal "victory", in intuitive terms. Since they have a specific end, they must be full-blown actions indeed. Not only are efforts identical to actions, but they are also identical to a specific sort of actions –agonistic actions.

Type identity: all actions are efforts (or effortful)

Type specification: some actions are efforts (or effortful).

The question of the type-relation between efforts and actions can be itself either unspecified or specified. That is to say, we can specify it by mentioning the species of action that we use as a point of reference. Indeed, I assume that there are at least two major species of actions, which are physical actions and mental actions. Consequently, we can specify the scope of the claim that we defend concerning the set-relation between actions and efforts. For instance, we can maintain that all physical actions are effort(full) while maintaining that some mental actions only are effort(full), as I shall do.

There is a puzzle here because some theories entail that all actions are efforts, while other theories entail that some actions only are efforts. We saw that the conatus and the investment-based views do not distinguish between the set of efforts and the set of actions: all actions are efforts. In that perspective, the concept of effort seems to play a function of denotation: it denotes what the agent is really trying to do when she acts (persevering in her being), or it denotes the costly, depleting nature of agency (that it requires to invest our scare, finite resources. On the other hand, the mental-based and physical-based approaches to effort do not entail the same answer to the type-question, since they restrict effort either to physical actions, or to mental actions only. That said, they leave opened the question as to whether all physical actions are efforts and, likewise, if all mental actions are efforts.

One remark is in order here. I spoke on several occasion of the possibility that effort would specifies action semantically, but not ontologically. Let me explain that point briefly. It is related to the proposition that all actions are efforts. Indeed, this proposition suggests that we need to distinguish two ways in which "effort" can specify "action" –two ways to conceive the nature of the specific difference of effort. It can be conceived as a real property of some actions, but it can also be conceived as a semantic property of the concept of effort. For instance, I defend that resistance is the specific difference of effort. This entails that the differentia of effort is a real property of some actions, a property that is of course reflected in the concept of effort. But we could also think of the differentia of effort as a semantic property of the concept only. On this view, the specific difference of "effort" is in fact a specific way to denote and describe actions. Describing an action as an effort would be like describing Cicero as Tullius. Stating effort's differentia would amount to explaining how the concept of effort denotes actions in a way that the concept of action doesn't. So, if all actions were efforts, effort would still constitute a specification of agency, albeit a semantic specification only. The concept of effort would not refer to a

real subclass of actions, it would refer to a certain way to denote actions –just like Tully denotes Cicero in a certain way.

Ontological differentia: the specific difference of efforts is a property of efforts themselves.

Semantic differentia: the specific difference of efforts is a property of the concept of effort only.

6.2.3. Third Puzzle: Is Effort Essentially Felt?

The third puzzle is about the role of the phenomenology of effort in the definition of effort. Indeed, we can distinguish two theoretical positions concerning the relation between the definition of effort and the feeling of effort. A subjectivist theory of effort maintains that some awareness of effort, whether conceptual or experiential, is essential to effort. An objectivist theory replies that the awareness of effort is not essential to effort and that one can make an effort without believing or feeling it.

Subjectivist view of effort: it is essential to an effort that the striving agent believes or feels that she is making an effort.

Objectivist view of effort: it is not essential to an effort that the striving agent believes or feels that she is making an effort.

Centralism and peripheralism could suggest that the sense of effort is essential to bodily effort, although it is ambiguous. One option is that all attempts to move the body are felt; another option is that an attempt to move the body only counts as an effort if it is felt. Theories of the feeling of mental effort are more straightforwardly committed to the subjectivist, phenomenalist view that effort is essentially felt, although they still carry some ambiguity. The comparator model suggests that an effort is an action with some essential phenomenology, to the effect that effort seems characterized as a difficult action and difficulty as a phenomenal property (namely, as the feeling that I have to do a lot to succeed in the action I am doing). The cognitive control theory also wavers between the objectivist view that effort just is voluntary mental control and the subjectivist view that an effort is a voluntary exercise of mental control that generates an unpleasant feeling (because the brain estimates that it is too costly), a feeling that motivates the agent to give up this investment of control.

6.2.4. Fourth Puzzle: Are there Species of Effort?

Finally, the sharp opposition between theories of physical effort and theories of mental effort raises several questions. First, should we try to suppress this dualism by going with physical or mental effort? Or should we simply distinguish two species of effort? Secondly, if we distinguish two species of effort, should we put them at the same level or should we maintain that one of the two is more fundamental in some sense? Thirdly, if we accept that there are two species of effort, should we restrict the number of effort's species to two? And how could we preserve the unity of the kind effort?

Unitary view: there is no species of effort.

Non-unitary view: there are species of effort.

Some theories clearly suggest that they opt for a unitary view of effort, according to which there is no species of effort. This is the case for theories of physical effort. Theories of mental effort could also suggest that there is no species of effort because they characterize (the feeling of mental) effort as a phenomenon ranging from physical to mental actions. For instance, consider the comparator model and its difficulty-based account that effort is a difficult action. There is no restriction as to which actions can be difficult: both mental and physical actions can be difficult. If effort refers to difficult agency, effort refers both to mental and physical actions. Consequently, it is unclear whether there is any room left for a substantial distinction between mental and physical effort. On the other hand, a formal theory like the investment-based account suggests that there can be several species of effort. If one opts for this theory, one can distinguish species of effort based on the resources being mobilized in agency. There could be physiological effort, attentional effort, economic effort, and so on and so forth. There is support for each side of the puzzle.

To conclude, there are four puzzles about the nature of effort and its role in agency. If we take all the philosophical and scientific representations of efforts that we have seen onboard, these puzzles can be given an antinomic form. That is, if we have confidence into scientific and philosophical research on effort, it appears that each of the four questions can be given two opposite answers:

(i) **The token-puzzle**: what is it for an action to be an effort?

a. *Identity*: an effort is an action.

b. *Property*: effort, effortfulness that is, is a property of an action.

(ii) **The type-puzzle**: is every action an effort?

a. *Type-identity*: every action is an effort (or effortful).

b. *Type-specification*: some actions are not efforts (or effortful).

(iii) **The phenomenological puzzle**: is every effort felt?

a. *Subjectivism*: every effort is felt.

b. *Objectivism*: some efforts are not felt.

(iv) **The species puzzle**: are there species of effort?

a. *Unity*: there is no species of effort.

b. *Non-unity*: there are species of effort.

III. PHYSICAL EFFORT AND MENTAL EFFORT

Introduction. Our general understanding of effort is rather confused. If we take it as a whole, it generates four antinomic puzzles. In the last two parts of this dissertation, I will try to solve these "little antinomies of effort". We can solve them in a plausible way, or so I will argue, if we conceive efforts in terms of resisted actions. The general idea is that if there is effort, there must be resistance. If rationality is the differentia of human beings, resistance is the differentia of effort. The proposal is that effort refers to the agonistic mode of teleological agency: we use the concept "effort" to refer to actions that stage a struggle. Making an effort is struggling, with oneself, the world, or others. Struggling with oneself, others or the world is facing some resistance coming from oneself, others or the world. Resistance is the differentia of efforts; efforts are those actions whose specific function is to remove such resistances. For instance, it is an attempt to overcome a temptation, to prevent the tempting power from causing its result; it is an attempt to overcome a bad intellectual habit, to prevent it from governing one's intellectual representations; it is the attempt to defeat an opponent during an arm-wrestling contest or during a debate. Everywhere the specific difference of effort is the same. Namely, it is that the agent is confronted with some opposition, competition, resistance…; which she tries to defeat, suppress, reduce, overcome. Agon is the ancient Greek word for struggle, competition, contest; efforts are agonistic actions: actions aiming at a causal "victory". During the last two parts, I will thus be proposing an agonistic account of effort.

This account is the conjunction of two key claims. (i) The first key claim is that there are two main types of resistance and consequently two types of efforts, namely, physical and mental efforts. This is what I call the "dualistic resistance-based view", which is the view I will be defending during this third part, to solve two first puzzles. (ii) The second key claim is that there is a formal conception of effort behind these resistance-based conceptions of mental and physical effort, which is the idea that an effort is an attempt to overcome a resistive power. This is what I call the agonistic definition, which I will develop during the fourth part, to solve the two remaining puzzles.[70] The conjunction of the dualistic resistance-based view and the agonistic *definition* is what I dub the agonistic *account*.

In this third part, I specifically advocate for the dualistic resistance-based account. According to it, there are primarily two sorts of effort and resistance: namely, mental and physical resistance. While a physical effort is an attempt to overcome some resistive mechanical force; a mental effort is an attempt

[70] In other words, I adopt a bottom-up approach. I start with the more concrete, intuitive and substantial (the resistance-based definitions of mental and physical efforts) before moving to the more abstract and formal (the formal agonistic definition, which aims more generally at integrating any potential resistance-based approach).

to overcome some motivational resistance. In different words, the central thesis here is that *desires* and *forces* constitute the two most obvious types of resistance. Note that the dualistic resistance-based view is *dualistic* but not *dualist*: it postulates that there are two species of effort, but it does not postulate that mental and physical powers causally interact.[71] This third part is divided into three chapters.

(7) During the seventh chapter, I introduce the global agonistic account in more detail. That is, I explain the difference between the *dualistic resistance-based view* and the *agonistic definition*. The difference between the two claims is twofold: first, the former is a substantial proposal while the latter is a formal proposal; secondly, they have distinct argumentative functions. (i) On the one hand, the dualistic resistance-based view captures the ordinary notion of effort and reconciles the antinomies of the type-puzzle and phenomenological-puzzle. With respect to the type-puzzle, it is true that all actions are effortful in the sense that every physical action is *physically* effortful; but it is also true that only some actions are effortful in the sense that they are *mentally* effortful. With respect to the phenomenology-puzzle, it is true that every mental effort is felt, but it is also true that some physical efforts only are felt. (ii) On the other hand, the agonistic definition captures the metaphysical meaning of effort and brings an answer to the species-puzzle and token-puzzle. With respect to the species-puzzle, the important point is that the unity of the kind effort is not threatened even if there are species of effort, for they can be subsumed under the same formal definition. With respect to the token-puzzle, I shall defend that efforts are actions and not merely properties of action. Once I have lay out the general pieces of my agonistic account, I move to the dualistic resistance-based view properly speaking. I begin with my resistance-based account of physical effort before moving to my resistance-based account of mental effort.

(8) During the eighth chapter, I introduce the resistance-based account of physical effort. First, I define physical effort in terms of *bodily* effort. Making a bodily effort is exercising the muscular power of one's body to overcome the resistance of opposite forces, that is, Newtonian forces that are incompatible with the mechanical goals of the agent. Second, I go back to the debate between centralism and peripheralism and argue that the feeling of bodily effort must be realized by both afferent and efferent signals. I also justify that it isn't essential to bodily effort that it is felt. I then briefly mention

[71] The resistance-based account I introduce is dualistic in the sense that it recognizes two species of effort, namely mental and physical effort. But it is not dualist in the cartesian sense that there is a dualism between two substances that are radically different yet causally related. In fact, the dualistic account I defend avoid the usual problems associated with cartesian dualism while preserving the common intuition that there is a difference between physical and mental effort. A terminological remark: I will ultimately give up the two expressions "mental" effort and "physical" effort in favor of a more technical and less ambiguous terminology (I will speak of "bodily" and "conative" efforts instead).

the determinants of the success of bodily efforts. Finally, I explain that bodily effort is consubstantial to physical agency, although the two are not perfectly identical.

(9) During the ninth chapter, I defend my resistance-based definition of mental effort. First, I define the mental species of effort in terms of conative effort ("effort of will", if you prefer). To make an effort of will is to try to perform an action that the agent intrinsically desires not to perform because it is unpleasant for her to perform it. In other words, it is an attempt to overcome a "contrary desire". I show that the necessary unpleasant character of conative effort entails that they are essentially conscious. Secondly, I go back to the question as to whether an effort is ultimately a property of an action or an action of its own. I maintain that efforts of will are authentic actions on two grounds: first, because they have a specific goal (overcoming a contrary desire); second, because they require to mobilize a specific capacity (self-control). An effort of will is a 2nd order-action whose function is to enable the performance of a 1st order action, by overcoming some intrinsic desire not to perform the 1st order unpleasant action. Third, I mention the fact that the nature of conative effort raises questions with respect to the problem of libertarianism and determinism. Fourth and finally, I maintain that efforts of will are necessarily unpleasant. To motivate this claim, I show the many ways in which actions can be unpleasant. I will conclude this third part by acknowledging the necessity to develop a formal definition of effort. On the one hand, a formal definition is needed in order to justify the claim that bodily and conative efforts are two species of the same general phenomena. On the other hand, I will need a formal definition to reply to the objection that some efforts aim at overcoming resistive powers that are neither forces nor desires.

7. The Agonistic Solution

To solve the four little antinomies of effort, I propose an agonistic account. The agonistic account is relatively complex because it has two layers. For that reason, it seems appropriate to precisely distinguish these two levels and their respective epistemological roles. In the first section (7.1.), I introduce the dualistic resistance-based account of mental and physical efforts. The dualistic resistance-based account is an ontologically committed account because it is committed to saying what efforts there are (namely, physical and mental efforts) and what they are (namely, attempts to overcome either mental or physical resistive powers). It makes sense of the type-puzzle as well as of the phenomenological puzzle. In the second section (7.2.), I introduce the agonistic definition. The agonistic definition is a formal definition and is therefore ontologically uncommitted: it tells what efforts must be; it doesn't tell what efforts there are. Its function is to preserve the unity of the kind "effort" despite the existence of two distinct species, but also to capture the common meaning of effort behind the many resistance-based approaches, and to leave the door open to other putative species of effort. I will develop it during the fourth part. It will solve the species-puzzle, and it will bring a clear answer to the token-puzzle. A third section (7.3.) summarizes and recapitulates the main advantages, questions and thesis of the global agonistic account.

7.1. The Substantial Proposal

The dualistic resistance-based account has two epistemological roles: first (7.1.1.), it must reconcile the antonymic proposals that are made in relation to the type-puzzle and to the phenomenological-puzzle; secondly (7.1.2.), it is an attempt to capture the ordinary, "folk" conception of effort.

7.1.1. First Explanatory Function: Solving Two Puzzles

My general intuition is that effort essentially entails resistance. I am committed to the view that there are two species of effort because I defend the existence of two sorts of resistive powers: the resistive powers of *mechanical forces* (gravity, air molecules, water molecules…) and the resistive powers of *desires*. We make physical (bodily) efforts to overcome mechanical forces; we make mental (conative) efforts to overcome motivational forces.[72] While physical effort refers to the confrontation with physical resistance; mental effort refers to the confrontation with mental resistance. The distinction between physical and mental effort yields an intuitive and clarifying dualistic resistance-based theory: dualistic, because it distinguishes physical from mental efforts; intuitive, because it makes sense of the folk notions of physical and mental efforts; and clarifying, because it solves two of the four puzzles.

First, it solves the *feeling-puzzle*. The question is: is effort essentially felt, or can we make an effort without feeling that we make an effort? The answer in fact depends on whether we consider mental or physical effort. On the one hand, physical efforts are not necessarily felt. A physical effort, or so I will argue, is just the exercise of the muscular power of one's body. Not all such exercises are felt. But on the other hand, mental efforts are necessarily felt. This is because they are exercises of some self-control power in order to overcome a motivational resistance, which the agent essentially feels in some way. In other words, the puzzle disappears if we see to it that the proposition "effort is essentially felt" applies to mental effort only; while the proposition "effort is not essentially felt" applies to physical effort only. The reason why physical effort is not essentially felt, whereas mental effort is, lies in the respective nature of mechanical resistance and motivational resistance, or so I will show.

Second, it solves the *type-puzzle*. It is the puzzle of the relation between actions and efforts: is any action an effort, or are some actions only effortful? This puzzle disappears if we distinguish mental from physical efforts, which we can do with the resistance-based view. As I shall explain, all physical actions

[72] For the time being, I equivocate between these series of two formulations. I will adopt a systematic terminological policy once I have defended the definitions of bodily and conative effort.

require to make a physical effort; hence, they are all physically effortful. But as I shall also explain, not all actions require to make a mental effort. The puzzle vanishes when we understand that the proposition "all actions are effortful" applies to physical actions only, while the proposition "some actions are effortful" refers to mental effort.

7.1.2. Second Explanatory Function: Capturing the Folk Notion of Effort

The distinction between mental and physical effort is central to my argument to solve the type and the phenomenological puzzles about effort. Indeed, it is the baseline for reconciling the various incompatible claims that we make about efforts. But the interest of this distinction goes beyond its theoretical, reconciling function. For indeed, it seems to me that I also hereby capture the meaning of the ordinary notion of effort. My intuition is that the folk notion of effort centrally refers to mental effort, but only marginally to physical effort. I don't deny that there are physical efforts: I am committed to the existence of both mental and physical effort. But I maintain that physical effort is not what the folk notion of effort refers to –at least not centrally. Indeed, the folk notion of effort seems based on the idea that there is discrete distinction between effortful and effortless agency. But physical effort does not enable to make this distinction easily because any physical action is or requires a physical effort. The folk notion of effort allows for effortless agency; physical effort does not allow for effortless physical agency; while mental effort allows for effortless agency. So, by law of excluded middle, the folk notion of effort probably refers to mental effort.

Indeed, it seems that our pretheoretical grasp on effort allows for the possibility of effortlessness and that it refers to mental effortlessness: actions performed without mental effort. Let me exhibit this pretheoretical sense of effortlessness. The possibility of effortless agency clearly appears when we take into consideration the possibility that a particular action can be an effort *for one agent* but *not for another*, but also that some actions can be effortful for an agent *at some time* but effortless *at another time*; or that we compare actions that are generally effortful from those that are generally effortless. Such distinctions signal that some actions can acquire or lose a property, which is not merely a question of degree. First indeed, some actions take efforts for some agents, while they don't for others: they are effortful for some, effortless for others. For instance, some (perhaps most) people need to make an effort to engage in physical activity like running or walking. But other people may actually need to make an effort *not* to do sport, as in the case of "bigorexia" (or muscle dysmorphia), a pathologic condition

that can roughly be described as an addiction to sport.[73] The agent who suffers from this condition must make an effort not to do sport. This seems to entail that she doesn't have to make an effort to do sport and, consequently, that there can be agency without effort.

Second, the possibility of non-effortful agency also seems revealed by the fact that some actions become effortful, or begin to require an effort, over time. For instance, standing on one's feet isn't effortful in the beginning. But one must make an effort to persist in standing if one stands long enough. The same action (standing) now acquires a new property, or requires the performance of a new act, which is the act of persisting in standing, of forcing oneself to stay in that position that has now become relatively painful. Third and more generally, we have no difficulty to contrast actions that are generally effortful from actions that are generally effortless. To illustrate, let's compare the effortfulness of raising one's arm for an old person whose vitality is fading away with the same action performed by a young person. Or imagine the difference between getting up in the morning to go to work and going out in the evening to grab a beer. Or perhaps consider the difference between working and playing. There seems to be at least *one* sense in which actions can be either effortless or effortful.[74]

At an intuitive level, the difference between getting up in the morning to go to work after a too-short night and getting out in the evening after a power nap to go and grab a beer with friends, is that you have to *force yourself* to do the former but not to do the latter. At the theoretical level, the resistance-based view of mental effort offers a straightforward explanation. The difference is that some actions require to make a mental effort because the agent needs to overcome the *resistance* of one's aversion towards the action, whereas other actions don't require such efforts of will because the agent doesn't have any aversion, if not an intrinsic desire, to perform them. The layman usually has to force herself to go for a run; the sport addict has to force herself not to go running. The difference is that the layman has to make an effort of will to go running (running is effortful) while the sport addict doesn't (running is effortless for her and, in fact, it is to *not* go running that is effortful). The ground of this distinction is the presence or absence of motivational resistance: agency is effortless if there is no motivational resistance; it is effortful if there is. Consequently, it seems to me that the folk notion of effort is captured by the resistance-based account of mental effort that I will develop. It can also refer to physical effort,

[73] More precisely, it is defined as a body dysmorphic disorder with "the delusional or exaggerated belief that one's body is too small, too skinny, insufficiently muscular" and is sometimes seen as "reverse anorexia" (Wikipedia).

[74] I claim that the ordinary conception conceives the effortful-effortless distinction as a discrete distinction. But is it so sure? It seems to me. I think it also appears when we think about the normative and evaluative discussions of effort. In particular, we can easily understand that performing a morally good action may or may not require an effort. For instance, imagine that you see a 100$ falling from someone's pocket. Let's agree that the morally good thing to do is to give it back. We have no trouble to contrast the situation in which we need to make an effort to do that good action, from the situation in which we don't have (Sorensen, 2010).

but this is less common. To conclude, the dualistic resistance-based account aims at solving the type and feeling-puzzles, but also and at the same time, to capture the ordinary notion of effort.

7.2. The Formal Proposal

That some of us want to connect effort and resistance seems undeniable. One interesting fact, however, is that the philosophers who connect effort and resistance usually reduce effort to one type of struggle. That is, they focus their attention on the exercise by the agent of one type of power, in the process of trying to overcome one type of resistive power. This calls for an attempt to capture the formal agreement between these views –the agonistic definition. The agonistic definition captures the formal definition behind all the resistance-based approaches, but it also has two other advantages: it will solve the two last puzzles of effort. First, it will solve the species-puzzle by justifying that we subsume different species of effort under the same generic, agonistic definition. For indeed, the distinction between mental and physical resistance will raise the worry of the unity of effort. Second, it will solve the token-puzzle because it will motivate the idea that we should conceive efforts not as properties of actions, but as actions in their own right. For the time being, let me illustrate the variety of resistance-based approaches (7.2.1.) before quickly introducing the agonistic definition (7.2.2.).

7.2.1. The Many Resistance-Based Approaches

According to Maine de Biran for instance, during an effort, it is the body that resists the will and the will that strives (the agent is identified to her will). An effort is the attempt of an agent's will to move the body, which inertially resists being moved. That is, it is an attempt of the will to overcome the body's resistance (Biran, 1995, 2001). According to the view defended by Olivier Massin, during an effort it is a mechanical force that resists an intentionally exerted mechanical force (Massin, 2017, 2022). An effort is an agent intentionally exerting some force against some opposite resistive force, in order to cause a physical change. According to William James, it is the mind's rational part that strives against the sensual part, which resists. A mental effort is the attempt of the mind's rational part to consent to a painful action, despite the sensual part of the mind not wanting that (James, 1880).[75] According to Freud, it is a function of the mind that resists another function of the mind. For instance, it is the unconscious that resists the conscious will (ego); or it is the critical function (superego) that resists the raw desiring function (id), (Freud, 1920). An effort is the attempt of one function of the mind to inhibit the manifestation of another function of the mind.

[75] James defends a dualistic view of effort, in the sense that he distinguishes mental effort from physical effort. I claim only that his theory of mental effort amounts to a resistance-based view.

In other words, the resistance-based theory comes in several versions. These versions presuppose the same concept of resistance, but they fill in differently. They follow a resistance-based approach to effort, but they also go one step further because they commit to identifying particular powers. Hereby, they identify efforts with one type of struggle. Biran reduces efforts to the struggle between the will and the body. But one could also identify efforts with the struggle between oneself and others in Sartre's spirit (Sartre, 2013); or with the struggle between one's inclination and the moral law in oneself in Kant's spirit (Kant, 1785); or with the struggle between the progressive and repressive factors in history (Adorno, 1973), etc.

7.2.2. The Unifying Agonistic Definition

Thus, there are several versions of the resistance-based view of effort. But they disagree concerning the substantial identity of resistances. Still, resistance-based views seem to share the same formal representation of the nature of effort, to the extent that they all see effort as an attempt to defeat some resistance. This is this formal representation I shall try to capture during the last part. In this last part, I won't be interested in the substantial identity of resistance. It means that I will not care whether *that* which resists to our efforts is the body, the external world, internal tempting desires, inherited values, others, superstructures, etc. Likewise, I will not be interested in knowing what power(s) the effort manifests: the muscular power of the body, the mental power to move the body, self-control, attention, courage, etc. I shall only care about expressing, in the clearest and most abstract way possible, the common intuition behind all the versions of the resistance-based view.

The proposal is that the formal and basic idea just is that an effort is an attempt to overcome a resistance, whatever the identity of the resistive power (one's body, some part of the soul, one specific tendency, etc.) and whatever the identity of the agent of effort, the striving agent (one's will, one's reason, a specific desire with which one identifies oneself, etc.). I call this formal resistance-based view, the *agonistic definition* of effort. It is, thus, the view that an effort is an attempt to overcome a resistance. Agon is the ancient Greek word for competition, struggle, fight. The definition is dubbed "agonistic" because it entails that an effort essentially implies a competition, struggle or resistive relation between the manifestation of two incompatible powers: the effort of the agent, and the resistance of some power to her effort.

My proposal is that efforts are essentially agonistic, competitive actions: not only do they consist in the act of an agent competing with a resistive power (that is *how* efforts are made), but they also aim at overcoming resistance (that is *why* efforts are made). Making an effort is, for instance, to compete with

gravity so as to overcome gravity (in order to do yet something else, such as winning a rock-climbing competition for instance); or it is to compete with a temptation so as to overcome a temptation (in order to do yet something else, such as quitting smoking for instance). The goal of effort represents a state of affairs that is akin to a victory; the process of effort is akin to a struggle between two fighters: two instincts, desires, beliefs, explanations, theories, cultures, societies, ideologies, laws…[76] This agonistic definition will solve the last two puzzles. With respect to the species puzzle, I will argue that whether or not there are species of effort, the unity of the kind effort is not threatened. With respect to the token-puzzle, I will maintain that efforts are identical to actions, since they are specific, agonistic actions.

The agonistic definition: the formal resistance-based definition of effort according to which an effort is an attempt to overcome a resistance. The definition is uncommitted regarding the substantial identity of the striving agent (the agent of effort –*who* strives) as well as with respect to the substantial identity of the resistive agent (*what* resists to the striver).

A substantial resistance-based view: a substantial resistance-based definition is a resistance-based view that commits to identifying the striving agent (reason, will, one's body, etc.,) and the resistive agent (external bodies, forces, desires, ideologies, ideas, etc.) in effort.

The agonistic account: the conjunction of the agonistic definition and of the dualistic resistance-based view.

[76] One of the important philosophical questions when it comes to effort, if not the crucial question of effort, is to identify the nature of the striving and resistive agents and their respective powers. For instance, what can the human body against mechanical resistance, such as gravity? What can the human will against motivational resistance, such as pain, fatigue, emotions and temptations? What can the human reason understand, against the opacity and complexity of the world, be it material, social, ideal? We shall not touch on these questions before the next chapter.

7.3. The Agonistic Account in a Nutshell

To conclude this introductory chapter, I explain the benefits of the agonistic account (7.3.1.) and I mention the different questions it raises (7.3.2.).

7.3.1. Key Motivations

The resistance-based approach has several advantages. (i) First, it brings a genuine justification to the claim that efforts are goal-directed actions. The twofold basic justification is, first, that an effort is a resisted action, second, that there can't be resistance for a non-teleological agent. There is no such thing as a resistance for a non-teleological agent because resistance essentially implies teleology, as we will see when discussing the formal nature of resistance during the last part. (ii) Secondly, the resistance-based view attributes a specific function to effort in agency. From the perspective of the Aristotelian specificatory strategy, this is an advantage since not only does it justify the function of the concept, but it also improves our general understanding of agency.

(iii) Third, the agonistic account integrates several aspects that are central to other definitions of effort, or so I will argue more thoroughly during the fourth part.[77] For instance, the exercise-based view maintains that effort is the exercise of the body. The resistance-based view justifies this proposal in the following way: an effort is an attempt to overcome a resistance, but the exercise of one's body normally requires overcoming gravity; hence, it requires an effort. Cognitive control implies that effort is usually, if not essentially, associated with the "unpleasant feeling of mental effort". The resistance-based view clarifies this proposal by distinguishing two possible types of mental resistance and two types of effort that may be conflated here. On the one hand, there is *cognitive* effort, which is the attempt to control and inhibit some problematic automatic reactions (to overcome them, in other words); but there might also be *conative* effort, which is the attempt to persevere in cognitive control despite the fact that it generates a motivation to give up (the so-called "feeling of mental effort"). The resistance-based view also integrates in a more justified way the aversion-based view, to the effect that being averse to perform some action (like getting up) is having to overcome some motivational resistance.

[77] I will dedicate an entire section in the last chapter showing that the agonistic definition makes the usual implicit definitions of effort, introduced during the second part, more intuitive. The argument is that when we think of these accounts of efforts as characterizations of certain aspects of effort and resistance, they become more solid and intuitive.

(iv) Fourth, the resistance-based view can be stated in a formal format that is welcoming to different views of what species of efforts there are. This has two fundamental advantages. First, it opens the door to the discussion of what efforts there are, a discussion that is ultimately an ontological discussion of what powers there are. For instance, one can hold that there is such a thing as the power of the will to overcome the resistance of the body, as Biran does. One can hold, as I am going to do, that there is probably a power of the will to overcome the resistance of motivational resistance. But one could also hold, for instance, that there is a power of the intellect to overcome the resistance from reality itself to be grabbed into one theory. The second crucial advantage of the formality of the resistance-based view, is that it gives us a framework that enables to reconcile the various incompatible propositions that are implicitly made about effort.

(v) Finally, the resistance-based view fares better than the only formal alternative. On close scrutiny indeed, there is only one other definition of effort that offers the possibility to distinguish species of effort without destroying the kind effort. It is the investment-based view. But the resistance-based view does it better because it is more phenomenologically plausible. Indeed, it fits nicely with the phenomenology of effort, that seems to be the phenomenology of trying to overcome some resistance, whether it is the resistance of some desire or the resistance of my body, of the external world, of habits, of others, of social institutions, etc. On the other hand, the feeling of investing resources appears phenomenologically more mysterious, if not simply non-existent.

There is a feeling of being depleted, which is the feeling of fatigue, and which often works as a motivational resistance. Fatigue motivates you not to act and this motivational power constitutes a genuine motivational resistance that you need to overcome if you still want to act. But the investment-based view requires to conceive the phenomenology of effort as the feeling of depletion, not as the feeling of being depleted. Indeed, effort is investing resource in the present, not to have invested resources in the past. The feeling of effort cannot be the feeling of fatigue, although the two phenomena can be correlated since fatigue can become a motivational resistance. The problem for the investment-based view is that there isn't a feeling of depletion that tracks the depletion of resources, like the needle on the screen behind the steering-wheel in your car tracks the ongoing decrease of the level of fuel in the tank. Summing up, the motivations for a resistance-based view are the following:

Motivations for the resistance-based view:

(i) *Teleology:* the resistance-based view justifies that effort is a mode of *teleological* agency because resistance, correctly understood, necessarily entails teleology.

(ii) *Functionality:* the resistance-based view attributes a specific function to the concept of effort in the grammar of agency, hereby justifying the existence of the concept and improving our understanding of agency.

(iii) *Formality:* the resistance-based view is available in a formal format that opens the discussion of what (species of) efforts there are. This formality enables to solve in an integrative way the puzzles previously identified:

a. The *type-question*: are all actions effortful? Reply: All physical actions are effortful, but not all actions are mentally effortful.

b. The *species-question*: are there species of effort? Reply: There are at least two species of effort, but they belong to the same formal kind.

c. The *feeling-question*: is the feeling of effort essential to effort? Reply: The feeling of effort is essential to mental effort but not to physical effort.

d. The *token-question*: is effort an action or the property of an action? Reply: An effort is an action, namely, an agonistic action.

(iv) *Integrative:* the resistance-based view of mental effort integrates key notions of several other accounts (for instance, the "unpleasant feeling of mental effort", central to cognitive control, is identified with a motivational resistance, as is the "aversion" of the agent towards what she does, which is central to the aversion-based view).

(v) *Phenomenologically plausible:* the resistance-based view implies that the feeling of effort is the feeling of trying to overcome some resistance (such as the resistance of desires, body, forces, habits, others, institutions…). This makes the resistance-based view more plausible than the investment-based view, which is the only formal-available alternative.

7.3.2. Key Questions

The agonistic account of effort gives the possibility to organize the several questions surrounding the understanding of effort. I should make it clear which questions I will frontally tackle, and which I will not. (i) The first question that I tackle, although perhaps not systematically, is: *what resists during our efforts*? I deal with this question in this third part, where I argue that desires and mechanical forces are what resists to our conative and bodily efforts, respectively. I do not treat this question systematically to the extent that I remain opened to the possibility that we could stive against other types of resistive powers. (ii) The second question I deal with is the metaphysical question of the formal nature of effort. Namely, in ontological terms: *what is effort*? Or, in semantic terms: what does it mean to try to overcome a resistance, regardless of the substantial nature of the resistance? I will deal with this question during the fourth part.

There are two questions that I do not, or not frontally, tackle. However, answering them is ultimately essential to an overall understanding of effort. (iii) To begin with, there is the question of the substantial nature of the striving agent: *what* or *who* overcomes? In other words, what is the capacity deployed in order to overcome such or such resistance? How to overcome a resistance? In fact, is it is even possible to overcome such or such resistance? The question is particularly crucial when it comes to efforts of will as it touches on matters of determinism, freedom of the will and self-control. (iv) Finally: *why overcome*? That is, what is the value of making efforts? This question touches on ethics, metaethics, the value of existence and the space that we want to give to efforts and struggles in our lives.

i) **What is effort?** The attempt to overcome a resistance.
ii) **What resists?** Contrary desires and opposite mechanical forces.
iii) **Who overcomes?** (eg., *the self, the will, reason, the rational part of the mind, superego…*)
iv) **Why overcome?** (eg., *to obtain goods, to become virtuous, to feel one's own power*…)

Conclusion. Let's recapitulate. After justifying the claim that efforts belong to the category of agency, we have performed an investigation to identify the usual conceptions of its differentia, which revealed four puzzles. To solve these puzzles, I have introduced an agonistic account that is constituted by two main claims: the substantial dualistic resistance-based view, and the formal agonistic definition. Now that I have introduced these two layers, I will run through each one in turn. In this third part, I defend the *substantial dualistic resistance-based view* according to which physical effort is the attempt to overcome physical resistance, while mental effort is the attempt to overcome mental resistance. In so doing, I solve the type-puzzle (all physical actions are physically effortful; but only some actions are

mentally effortful) and the phenomenological puzzle (all mental efforts are felt; not all physical efforts). I will then defend the formal agonistic definition during the fourth part. I will hereby justify the unity of the kind effort and bring an answer to the species-puzzle. I will also justify the claim that efforts are actions and not merely properties of actions. In terms of dialectic, I propose a bottom-up approach. I start from the more specific and intuitive, to move towards the more abstract. Namely, I begin with the relatively intuitive definitions of mental and physical efforts in terms of resistance (the "dualistic resistance-based account"). Then, I will capture the formal structure behind both definitions (the "agonistic definition of effort").

The agonistic definition: the formal resistance-based definition of effort according to which an effort is an attempt to overcome a resistance.

The dualistic resistance-based account of effort: the substantial resistance-based view according to which there are at least two major species of effort, namely a mental species (conative effort) and a physical species (bodily effort).

The resistance-based view of conative effort: a mental conative effort is an attempt to overcome a conative resistance, that is, it is an attempt to perform an action that the agent intrinsically desires not to perform because it is unpleasant for her to perform it. The folk notion of effort centrally refers to this species of effort.

The resistance-based view of physical effort: a physical bodily effort is an attempt to overcome some mechanical resistance, that is, it is the teleological exercise of one's bodily muscular power. The folk notion of effort marginally refers to this species of effort.

8. Effort of the Body

Introduction. We saw during the fourth chapter that effort is often primarily conceived as physical effort, both by historical philosopher like Descartes, Hobbes and Biran, but also by contemporary scientists such as those endorsing centralism or peripheralism. They all tie effort to the body, albeit in different respects: the volitional view frames effort as the attempt to move the body, Biran sees it as the attempt to overcome the resistance of the body, (amended) peripheralism sees it as the exercise of the body (the "exercise-based view"). So, there seems to be a physical species of effort. But what is it? According to the resistance-based perspective that I adopt, we should conceive it as *bodily effort*. The exercise-based view is the closest to the truth. Contra the volitional view, making a bodily effort is not just trying to move, it is actually exercising one's body. Contra Biran, making a bodily effort is not trying to overcome the resistance of one's own body with the power of one's will. It is, in fact, trying to overcome the resistance of external Newtonian forces, like gravity. The resistance is not internal (the body) but external (forces); the resistive relation is not dualist (the body vs. the will) but mechanical (the power of the body vs. Newtonian forces).

In a first time (8.1.), I will define bodily effort. Making a bodily effort is exercising the muscular power of one's body in order to overcome the mechanical resistance of the external world, such as gravity, inertia or air molecules. Then (8.2.) I will dwell on its phenomenology: the feeling of bodily effort, or so I should argue, is not essential to bodily effort. We can make, and usually make, bodily efforts without feeling them. I will take a stand concerning the debate between peripheralism and centralism by defending the necessity of both efferent and afferent signals for the realization of the feeling of bodily effort, when we experience it. (8.3.) I will say a few words about the three main determinant of bodily effort. Finally (8.4.), I will discuss the extension of bodily efforts and show that any actual physical action requires some minimal bodily effort.

8.1. The Nature of Bodily Effort

The expression “physical effort” is misleading. For when we think and speak about physical effort, we tend to think about actions like running the marathon. Thus, what we really think about, I contend, is rather to the *mental* effort that running the marathon requires. To that extent, the effort of running a marathon is not so different from the effort of having a difficult discussion with an ideological opponent: it is an attempt to perform an unpleasant action that the agent is motivated not to perform. Making a physical effort is making a mental effort to overcome some motivational resistance, in order to perform a physical action. I’ll come back to “physical effort”, correctly understood, during the next chapter about efforts of will thereof.

That clarification aside, let’s define bodily effort. A bodily effort is an attempt to overcome some mechanical resistance with the muscular power of the body. It is exerting some force with one’s body, against some opposite forces, in a teleological wat. A bodily effort is an action that consists in the exercise of the muscular force of one’s body in order to overcome a mechanical resistance in the external world. For intuitive examples, think about doing a pull-up, lifting your arm, Atlas holding the world, raising your glass, holding a child in your arms, climbing a few stairs, or pushing a cupboard. There are two fundamental aspects to bodily effort. The first one is the *mechanical resistance*. The second one is bodily power.

8.1.1. Mechanical Resistance

An effort is an attempt to overcome a resistance. The first idea of the bodily view of “physical” effort is, firstly, that a bodily effort is an attempt to overcome a *mechanical* resistance. Formally, as we shall see, a resistance is the manifestation of a power that determines the default behaviour of an object, this default behaviour being directly incompatible with the goal that an agent intends and tries to reach. Substantially, a mechanical resistance is the manifestation of a physical force, that determines the default kinetic behaviour of my body in a way that is indirectly incompatible with the kinetic behaviour that I try to have. For instance, gravity determines the instantaneous default kinetic behaviour of a climber’s body in such a way that her body falls, does not leave the ground, does not move upward, while she wants to climb. For instance, a headwind determines the instantaneous default kinetic behaviour of the cyclist’s body in such a way that the speed of her body decreases, while she wants to maintain her speed. Gravity determines the default kinetic behaviour of my hands in such a way that they fall on the keyboard of my computer, while I want to lift up my hands and fingers in such a way that I can write this sentence.

Making a bodily effort is trying to overcome such forces. Bodily effort is the part of our physical agency that aims at inhibiting the effects of mechanical forces that are incompatible with the teleological sequences we want to perform. Making a bodily effort is trying to determine the actual kinetic behaviour of one's body in a way that contradicts its default kinetic behaviour, so that its actual kinetic behaviour fits whatever sequences of motor and higher-order goals the agent is trying to achieve. For instance, the air molecules and a headwind determine the instantaneous default kinetic behaviour of a moving cyclist's body: at time T, if she doesn't do anything, she'll slow down. Her goal is, however, to maintain her speed (in order to catch up another rider up front, say). She is thus making a bodily effort. She is trying to substitute the headwind with her muscular power. The headwind is the determinant of the default kinetic behaviour of her body, but this default kinetic behaviour is incompatible with the satisfaction of her intention. She makes an effort: she exercises her muscular power, so that it is the force she teleologically exerts that critically determines the actual kinetic behaviour of her body, and not the headwind and air molecules.

> Mechanical resistance: a mechanical resistance is a Newtonian force that determines the default kinetic behaviour of the agent's body in a way that is directly incompatible with the successful realization of a teleological sequence that the agent is trying to achieve.

This account of mechanical resistance is based on Massin's force-based account of effort (Massin, 2017, 2022a). Massin identifies the resistance to our effort with opposite forces. An opposite force is a force, whose direction is opposed to the direction of the force intentionally exerted by the agent. Likewise, the ontological assumption of my account of bodily effort is, obviously, the assumption that there are Newtonian forces.[78] This assumption is central to many accounts:

> "Force-based accounts of effort have been especially popular among philosophers and psychologists interested in the idea that the feeling of effort presents us with the distinction between ourselves and the external world […] Key to their view is the idea that through effort we encounter some resistance from the external world […] Upholders of the force-based approach typically hold that efforts essentially involve at least two forces: the force intentionally exerted by the agent, and the resistive force exerted in return by that on which he acts […] A motor effort [=

[78] For a defence of the reality of forces, see (Massin, 2009; J. M. Wilson, 2002, 2006), and for a defence of the reality of causal powers more generally, see (Kistler & Gnassounou, 2007; Williams, 2019). For a defence of causal powers grounded in the very experience of effort itself, see (Biran, 1995, 2001).

bodily effort in my terminology] consists of (i) an agent exercising a mechanical force (F1) on a body in order to make it move or stay at rest and (ii) that mechanical force being at least partly counterbalanced by an opposite force (F2): the resistive force." (Massin, 2017, pp. 244-245)

Making a bodily effort is trying to overcome a mechanical resistance, that is, some opposite force. Here, a remark is in order. The success of a bodily effort does not always require that the agent exercises a superior force than the opposite forces. This is the case if, for instance, she wants to make a pull-up. In that case, the force she exerts with her arms needs to be superior to the force that gravity exerts on her body. But if she wants to play with a kite for instance, she just needs to exert enough force to avoid the kite being ripped out of her hands. By default, the wind is going to rip the kite out of the agent's hands. So, she makes an effort by pressing on the bar, just enough so that she keeps on grabbing the bar.

"It may be tempting to think that the success of an effort depends on the exerted force (F1) having a higher absolute magnitude that the resistive force (F2), for otherwise the body would never move in the direction of the exerted force. This view is however mistaken: When one flies a kite, the goal is typically that the force we exert on the string exactly compensates the force exerted by the wind, so as the maintain the kite in equilibrium. More generally, we do not only aim at moving things around (in which case, effort indeed succeeds only if the magnitude of F1 is superior to the magnitude of F2); we may also aim at keeping things in their place (in which case the magnitudes of F1 et F2 must be the same), or we may aim at slowing moving things down (in which case the magnitude of F1" (Massin, 2017, p. 245).

8.1.2. Bodily Power

A bodily effort is an attempt to overcome a mechanical resistance, that is, a Newtonian force that determines the agent's body to undergo an instantaneous kinetic behaviour that is directly incompatible with some goal she tries to reach. We usually make these efforts without noticing them. It is rare that our conscious intention integrates, in their content, something as the "overcoming of gravity", for instance. The agent of a bodily effort tries to satisfy a goal. For instance, she tries to clean her room. To do so, she needs to place back some books in the shelfs of her library. To do so, she must make some bodily efforts. When she grabs a book indeed, some force (gravity, F2) is exerted on the book. But in order to grab the book (as opposed to letting it slip form her hand) and put it on the shelf, she must

exert some opposite force, first by pressing her fingers on the book; second by contracting her biceps and shoulder muscles to grasp and then lift the book.

The first essential aspect of bodily effort is mechanical resistance. The second aspect is the *body*. It seems important to put emphasis on that point. As a technological civilisation, we have numerous technical ways to overcome the resistive forces of our environment. Cars, planes and trains spare us many bodily efforts. For this reason, it is crucial to restrict the definition of the physical species of effort to bodily, muscular exertion. Otherwise, it could entail the implausible consequence that an agent can make an effort to change the kinetic behaviour of an object by exerting force either directly or *indirectly*. For instance, we don't want to say that the operator of a crane who lifts a heavy bit of concrete makes an effort to lift the concrete. This is clearly wrong: the crane lifts the concrete, not the pilot, although she controls the crane. The pilot makes little bodily effort to lift the lever, her hands and her head in such a way that she can see what she is doing and achieve a general agentive sequence ("moving that piece of concrete", "going through that day of work"). Likewise, when we drive, we don't efficiently cause the movement of the car, although we control it. We don't cause it in the sense that the force we exert on the pedals and steering wheel is not the force that propels the car.

To avoid such consequences, the definition of bodily effort must specify that the force exerted is the force of the agent's body. In that way, we avoid the problematic consequence that an agent's bodily effort can cause mechanical effects that are physically impossible for us to cause, such as propelling a F1 car at 200m\h. Now, we sometimes describe the behaviour of machines as effort, but this is projective and derivative. We can say that a digger machine makes an effort to dig and lift a huge quantity of dirt. In so doing, we project the driver's goal onto the machine, which is quite a common thing to do. But we would be more reluctant to saying that the driver makes the effort to lift the dirt. This is because we conceive bodily effort, precisely, as *bodily* effort, and that we know that the driver couldn't possibly lift two tons of dirt with her body.

Making a bodily effort is exercising the power of one's body, which is first and foremost the muscular power of one's body and its associated physiological determinants (cardiovascular and respiratory activities, mainly). Making a bodily effort is intentionally exercising the muscular power of one's body to overcome some mechanical resistance of the environment. A bodily effort is the exercise of the muscular power of one's body so as to overcome a mechanical resistance: some forces, in the environment, that determines a default kinetic behaviour of our body that is incompatible with what we want and try to do. For instance, it is exercising the muscular power of one's shoulders to raise one's arm, that is, to overcome gravity, that is, to replace the default mechanical determinant of the position of one's arm (gravity) with a new determinant, which is one's own muscular power. The goal of the effort is the overcoming of a resistance, but we are not necessarily aware of that, and we normally make bodily

efforts for numerous ends. We may raise our arm to signal a turn, to prove a point, to hail or to say high to a friend.

> Bodily effort: the exercise, by an agent, of the muscular power of her body in order to overcome a mechanical resistance.

> Mechanical resistance: a mechanical resistance is a Newtonian force that determines the default kinetic behaviour of the agent's body in a way that is directly incompatible with the successful realization of a teleological sequence that the agent is trying to achieve.

It is worth noting that on some occasions, the resistance may "come" from the agent's own body. But even in those cases, the resistance remains mechanical and there is no need to postulate interactions between spiritual and physical powers. For instance, stretching and yoga are activities taking advantage of the various mechanical resistances of one's own body. If you grab your leg with your arms, your leg can passively exercise a downward force while you press upward with your arms. In more precise terms, the resistance rather comes "through" your body. Indeed, the mechanical resistance is the downward force exercised by (gravity on) your leg; the effort is the upward force you exercise with your arms. The resistive relation is between the force you exert with your body and gravity.

8.2. The Awareness of Bodily Effort

Once we adopt the resistance-based view of physical effort as bodily effort, we can understand why we can want to say that effort is not essentially felt and that all actions are effortful. Namely, we want to say that in regard to bodily effort. I will now focus on why bodily effort is not essentially felt (8.2.1.) and I will go back to the debate between peripheralism and centralism about the realizers of the feeling of bodily effort, when it is felt (8.2.2.).

8.2.1. Bodily Effort Is Not Necessarily Felt

The experience of bodily efforts might be at the very source of the awareness of the distinction between ourselves and the external world (Massin, 2022b). For the present purpose, I will restrict myself to two considerations regarding the feeling of bodily effort. The first point I want to highlight is the fact that bodily efforts are not necessarily felt. A bodily effort is the intentional exercise of muscular power to overcome a mechanical resistance. But it is perfectly conceivable, and in fact it often happens, that an agent makes a bodily effort without feeling it.

The reasoning is the following. First, we perform multiple automatic actions, like shifting gears while driving, stepping onto the sidewalk after crossing the street, or walking to a room while having a discussion over the phone with someone. Second, those automatic actions are intentional. These are not events that occur like that, that happen to us. We shift gears in order to continue driving and reach a destination; we climb on the sidewalk to continue our walk and meet with someone; we reach another room because we initially wanted to bring something here. Third, these intentional automatic actions can be unfelt. We can shift gear without feeling it, that is, without paying conscious attention to the pressure of the lever on the palm of our hand, while thinking to events that are unrelated to the current driving action. Fourth and finally, at least some bits of such automatic actions are bodily efforts. When the driver pulls the lever backwards for instance, she must overcome the slight mechanical resistance of the lever.

It follows that one can make a bodily effort without feeling it. We seem to become aware of our bodily efforts in three sorts of contexts. First, we feel that we exert forces against opposite forces when the mechanical resistance becomes more intense and directs our attention towards it. Second, we feel the mechanical effort when we start to be motivated to give it up, like when we hold an object for long enough and that the muscular tension becomes unpleasant to prolong. Third, we may also feel our bodily efforts when they are parts of complex and technical actions that requires some attentional focus.

8.2.2. Reuniting Centralism and Peripheralism

The second remark I want to make concerns the realizers of the feeling of bodily effort. The feeling of effort is the object of the debate between peripheralists and centralists. Based on the definition of bodily effort that I advance, I defend two claims regarding this discussion. The first claim is that centralists and peripheralists alike talk about the feeling of bodily effort. Three reasons can be brought up. First, they do not attribute a negative affective profile to the experience of effort. The fact they overlook the negativity of the feeling of effort suggests that they are interested in bodily effort, in contrast to mental effort. Second, they describe the feeling of effort as the feeling of a process that is body orientated. We can see it clearly for peripheralists, since they believe that muscular tension and bodily activity more generally is essential to the feeling of effort. But it is also the case for centralists, to the extent that the feeling of effort is the feeling of efferences, which are motor commands –commands aiming at moving the body. Although they believe that the actual activation of the body is not essential to the feeling of effort, it is nevertheless what efforts aim at. A third reason to believe that centralists and peripheralists are interested in the feeling of bodily effort is that some of them, like James, clearly distinguish between "physical" and "mental" effort and restrict their (peripheralist) claim to the feeling of physical effort. Thus, the first claim is that peripheralists and centralists study the feeling of bodily effort.

The second claim is that each theory is insufficient, but that they are complement each-others. The feeling of bodily effort must include efferent information that the agent is the cause of the bodily exercise. Otherwise, we wouldn't be able to distinguish bodily effort, which is an action, from passive muscular exertions, like cramps or passive muscular tension. But the feeling of bodily effort must also include afferent information that the agent is actually exercising her body, that is, exerting muscular power. Otherwise, it wouldn't be a feeling of *bodily* effort.

Peripheralists believe that the consciousness of effort is realized by afferent signals, moving from the body to the brain, and indicating what is happening to the body. Centralists believe that it is realized by efferent signals, moving from the motor areas of the brain to the body, indicating what the "agent" does. But neither type of signals is sufficient. Bodily effort is, by essence, bodily. If efferent signals were sufficient, it would entail that bodily effort is not necessarily bodily. Indeed, the feeling of efferences does not require that those efferences or motor commands succeed in causing anything in the body. After all, according to centralists it is possible to have a feeling of effort in cases of naked tryings, when a paralysed agent tries to move a paralyzed limb, which can't be moved in this situation. But this is not a feeling of bodily effort; it is perhaps a feeling of mental effort to the extent that it can be tiring to try to do something you cannot succeed at, to the point that you are motivated to stop trying and that you need to make an effort of will to keep trying. When we do feel bodily effort, we feel both that we

intentionally exercise the body; and that the world resists. The realizers of such a feeling must be both efferent and afferent.

Efferences represent the fact that the agent exercises her body. Afferences represent the fact that the body is being exercised. On closer scrutiny, afferences may play a twofold role. On the one hand, they represent bodily activity in relation to the motor commands. That is, they represent muscular contractions as effects of an agentive cause. But up to that point, it is as if the feeling of bodily effort was entirely internal; as if it was merely the agent causing the exercise of her body; as if she was feeling that she causes the exercise of her body. No signals, at this point, would account for the feeling of mechanical resistance of the external world. This is where the twofold function of afferences could probably come into play. Some afferences could play the role of a representative of the mechanical resistance of the external world.[79]

> The awareness of bodily effort: the feeling that (i) I intentionally exert the muscular power of my body (I feel that I activate my muscles, through efferent signals) and (ii) that something resists to the force I exert (I feel pressure and tensions indicating that some opposite force applies to my body, through afferent signals).

[79] Here, I assume and endorse the view that the feeling of mechanical resistance is realized by the afferences responsible for the feeling of pressure and touch (de Vignemont, 2007; Massin, n.d., 2022b). The idea is that the sense of touch represents pressures and tensions, and that pressures and tensions present us with the independence of the external world. On this view, it is plausible that afferences realizing the feeling of touch, pressure and muscular contraction represent, to the conscious agent's eyes, the mechanical resistance of the external world. For instance, the rock climber feels that she intentionally exercises her body, but she also feels sharp pressure in her fingers, huge tensions in the tendons of her arms and intense contractions in her muscles; and it is through those afferent signals that she feels the resistance of the external world (of the gravitational force that is).

8.3. The Determinants of Bodily Effort

As explained during the previous chapter, I do not frontally tackle the question “what overcomes”. It is the question of the determinants and of the success conditions of effort. To be more precise, the question I do not frontally tackle is the question of the determinant of efforts of will, for it opens a deep rabbit hole about determinism and “freedom of the will”. But I shall, however, say a few words about the determinants of bodily effort, for this matter is less obscure at the conceptual level (it doesn’t mean that it raises empirical questions). Indeed, we can clearly distinguish the three intricated determinants of bodily efforts: bodily power, skill and will.

8.3.1. Proximal Determinant: Bodily Power

Indeed, it is worth noting that there are three distinct and interconnected determinants of the success of bodily efforts. First, there is the proper determinant of bodily effort’s success, which is simply the power output of which one’s body is capable. Indeed, the most basic and direct determinant of the success of a bodily effort just is the power output that a given body can produce in a given consideration. If you want to lift a certain object, the first reason why you succeed or not is whether you have enough strength “in you”. How exactly we should understand the power output of which a body is capable, is a matter of empirical research. At a very coarse-grained level, it is proximally determined by the muscular capacity of the individual, which is itself modulated by her respiratory and cardiovascular capacities.

8.3.2. Facilitating Determinant: Skill

There is a second indirect determinant, which we can call a facilitating determinant, which is skill or technique. As many athletes know, weaker athletes can perform better than stronger athletes. That is, an agent with superior physical power can lose to another with greater technique. This is because bodily effort is not the only determinant of the success of physical actions. For while bodily effort is primarily a matter of force; the more technique one has, the greater one can perform in physical tasks. This is because the more technique the agent has, the most she minimizes the minimal mandatory intensity of her effort.

We can observe it clearly among rock climbers for instance. Some climbers are physically weaker as, for instance, they can do much less pull-ups than others. However, they manage to climb more difficult

routes, routes that are considered objectively more difficult. This is because they minimize, thanks to their technique, the required intensity of their bodily effort. Greater technique can have both a relative compensatory effect (a weaker athlete can win to a stronger one), but it can also have an absolute effect of performance increasement (the best athlete in the world is the one who has the greatest bodily power, but also the greatest technique).

8.3.3. Enabling Determinant: Will

Third and lastly, there is what we can call the conditional, enabling or distal determinant of bodily effort and which is the agent's desire to make a given bodily effort. At that level, the question is whether the agent *desires* or not to make a certain bodily effort. As long as the bodily effort does not raise any motivational challenge, the willing aspect does not appear. But when the bodily effort becomes sufficiently intense to generates contra-motivations, the willing aspect come into sight. This is easy to test and experience: one just has to grab some object with one hand, raise the arm and hold. At some point in time and due to some evolved physiological mechanisms, the bodily effort will become unpleasant, then more and more unpleasant. Consequently, the agent will start to desire to give up. At the very moment she is motivated to give up because of the unpleasantness of holding the position, the agent has to start to make an effort of will to persist in her bodily effort. For she now has to overcome the desire to stop holding the object, that is, to make a conative effort. Or so we will see during the next chapter. Before that, one last remark is in order.

8.4. Every Physical Action is Bodily Effortful

The type-puzzle about effort appears when we consider that we want to give two contrary answers to the question: are all actions effortful? On the one hand, we want to answer positively; on the other hand, we want to answer negatively. The antinomy vanishes when we understand that we do not talk about the same efforts. We can say that every action is effortful, but in the sense that every physical action is bodily effortful. To show why, I will first (8.4.1.) distinguish two relations between actions and efforts, namely "being an effort" and "being effortful". Then (8.4.2.), I will explain why every physical action is bodily effortful.

8.4.1. Being an Effort and Being Effortful

A bodily effort is the exercise of the muscular power of the body in order to overcome mechanical resistive forces, like gravity or air molecules. Physical agency is filled with bodily effort. But how extended is bodily effort? To understand it, we need to distinguish two mereological relations between efforts and actions. Indeed, I maintain that every physical action is bodily *effortful* but not that every physical action *is* an effort. This is due to the identity conditions of effort, which I will be discussing more thoroughly during the last part. The idea is that an effort stops when the resistance is overcome, while the global action in which the effort is made, can continue after. For the goal of an effort just is to overcome a resistance.

I am here making the assumption that "little" actions can compose "bigger" actions. For instance, think about pole vaulting. During a meeting, the current holder of the last 8 world records breaks it once again by passing 6,25 meters. Let's assume that there is one relatively complex action, which is "Armand Duplantis breaking the world record once again". It is composed by, say, three actions: the running, the jumping, and the falling. I assume that the "breaking the world record" aspect refers to some social properties that are attached to these actions. The global action *includes* a bodily effort, which is the running towards the bar and the lifting of his body with the pole. But there is no bodily effort when he lets himself fall. In rigorous terms, he can say that "breaking the world record was bodily effortful" and that "running and jumping were bodily efforts". Now, I also assume that there is some accordion or scaling effects, as we can go more or less fine-grained. For instance, we can even decompose the running parts into parts that are bodily efforts and parts that aren't. To illustrate, we could perhaps observe that, during the third stride, he stops actively controlling the downward movement of his left feet: there was no bodily effort at this exact time, with respect to this body part. But if we stay at a coarser-grained level,

we can distinguish the running and the jumping, which are bodily efforts, from the falling down to the mattress, which is not. The global action takes some bodily efforts, is bodily effortful, but is not an effort.

8.4.2. When Does Bodily Effort Stop?

All physical actions are bodily effortful, at least in this world. For indeed, every physical action requires to overcome some resistive force, like gravity or air molecules. This is the justification of the first half of the type-puzzle. But if every physical action is bodily effortful, it seems too radical to maintain that every physical action is a bodily effort. We shouldn't reduce physical agency to bodily effort, for two reasons. First, physical agency aims at various different goals, while efforts have merely agonistic goals. Second and as mentioned during the pole-vaulting example, our physical actions might include inertial bits. For instance, the cyclist who has reached a certain speed on a slight descent is still performing a physical action (she controls her bike, the direction, the speed, etc., she voluntarily causes changes hereby), but she doesn't need to make a bodily effort anymore to propel the bike (gravity does it very well here). Physical agency might not be reduced to bodily effort because our physical actions may integrate y inertial moments. A physical action integrates an inertial moment if, at some point of its unfolding, the agent relies on external mechanical forces to pursue, continue, initiate or stop her action.

But if we shouldn't identify physical agency and bodily effort, one may however wonder when we stop making bodily efforts. In fact, one may worry that bodily effort extends beyond the limits of physical *agency*. For aren't we always overcoming gravity, for instance? My reply is that the exact extension of bodily effort ultimately depends on what sorts of goals we accept. For instance, I am sitting in a chair while writing this line. In order to be able to do that, I need to hold my upper back and neck in a slightly tensed position. That is, it seems that I could relax my muscles more, which would result in me sliding down in my chair. This little counterfactual scenario suggests that I am making some bodily effort(s) indeed. I exercise the muscular power of my body to overcome the mechanical resistance of gravity, which would result in a change in my posture. This exercise of muscular power is somewhat minimally teleological, because I do it in order to be able to sit at the right distance of my screen and keypad, it is part of the global intentional action that is "writing the end of this chapter", say.

The question, then, is whether bodily effort ever stops. My proposal is that it stops when there is no teleology anymore. But I do not commit to saying where teleology stops. But to illustrate, let's assume that we don't have any goals when we sleep. I take it that it is pretty non-polemical that we do not physically act then. There is still tension in some body parts. For instance, one may sleep in such a position that the muscles around one's left hip are still contracted. There is thus force being exercised.

But if we assume that there is no goal, there is no overcoming, there is no effort. But when it comes to diurnal life, it follows that we constantly make minimal bodily efforts if we have an extended conception of teleology. We make bodily efforts to stand in a good position in the chair (in order to be able to write a chapter); to stand up, to walk, to shake hands, etc. I would be tempted to maintain that there are bodily efforts here. Perhaps, one good way to see that all these episodes take bodily efforts is that they can start to require an effort of will if we make them for long enough. Standing straight in a chair, mimicking a somewhat aristocratic posture, will soon be taxing for some muscles and you'll soon desire to change posture –you will soon have to make an effort of will to stay in the same posture, to persist in this bodily effort to which you initially didn't pay any attention.

So, bodily effort is very widespread indeed. The only limit to it seems to lie in what we accept count as teleological behaviour. The ordinary notion of effort seems quite different and is better captured by the concept of effort of will. Now, before we move to efforts of will, it is worth noting that agency does extend beyond bodily effort. That is, even if we constantly make bodily effort, what we physically do does not only result from our bodily effort. This is because we rely a lot on technology during our physical actions, in which case machines make "efforts" for us. Our bodily efforts are not the only causes of the physical effects we produce. For instance, if I say that "I went to Paris" and that by that I mean that I took the train, then it is true that I made little bodily efforts to walk to the train station and get on the train. But it is not true that I made a bodily effort to go to Paris. The train (electricity that is) made it for me, so to speak. When I go to Paris to visit a friend, my getting up on the train is the direct result of a bodily effort, but my reaching Paris is a result of the train taking me there.

9. Effort of the Will

There is an ordinary notion that an action can be either effortful or effortless, depending on the context and the agent. The ordinary distinction between effortfulness and effortlessness refers, or so it is my view, to the distinction between actions that require an effort of will from actions that don't. An action requires an effort of will if the agent has to overcome a motivational resistance to perform said action successfully. Making an effort, when it is an effort of the will, is trying to do what the agent intrinsically desires not to do. The effort of will is the mental action that the agent performs in order to persevere in the action that she is tempted to give up. There are two reasons to focus on efforts of will in the first place. First, efforts of will are mental efforts. But as we say during the first part, the nature of mental effort remains unclear. Consequently, bringing a clear account of conative effort will fill that gap. Second and as aforementioned, the folk notion of effort seems to be concerned with conative effort. So, bringing a clear account of conative effort is making sense of what we usually mean by "effort".

(9.1.) The first section proposes a resistance-based definition of efforts of will: it is an attempt to overcome the motivational resistance of a *contrary desire*. A contrary desire is a desire to give up what the agent is doing, because it is unpleasant. (9.2.) The second section motivates the idea that an effort of will is a genuine action, and not merely the property of an action. The idea is that efforts of will are second-order actions, whose goal is to enable the performance of an unpleasant first-order action. For instance, we can make a conative effort to perform an unpleasant physical action like running a marathon; or we can make a conative effort to perform an unpleasant mental action like focusing on a boring lecture, or making a difficult decision, debating with an ideological opponent or reforming one's basic beliefs, etc.

(9.3.) The third section mentions the fact that the possibility of the success of efforts of will raises questions that touch on determinism and libertarianism. I should say right away that I won't investigate the nature of the power(s) that we exercise to overcome the motivational resistance of contrary desires. For while the power we exercise during bodily effort is not so mysterious (the power to exercise muscular force teleologically), the power we exercise during conative effort raises much more serious if not aporetic questions. (9.4.) In the fourth section, I tackle an objection against an essential aspect of conative efforts, which is their unpleasantness. I will reply by showing the many ways in which actions can be unpleasant to perform. In other words, I will illustrate the many ways in which desires can resist. For indeed, we can distinguish subspecies of conative effort based on the nature of the action that the agent desires not to perform and tries to perform. I will thus explain how we can define most efforts in conative terms, including decisional efforts, attentional efforts, physical efforts (correctly understood),

long-term efforts, intellectual efforts, and interindividual efforts. In conclusion however, I will acknowledge that it is too radical a view to maintain that effort is essentially unpleasant and I will motivate the need for a formal resistance-based definition of effort.

9.1. The Nature of Conative Effort

Mental effort is subject to several bodies of research in cognitive sciences. The comparator model links mental effort to the feeling that an action is difficult for me; the cognitive control research program proposes that the feeling of mental effort is phenomenally unpleasant and motivates the agent to give up what she is doing. But what precisely is the mental species of effort? The answer remains blurry. I suggest that mental effort is primarily conative effort, effort of the will. There may be other mental species of effort, such as attentional effort and intellectual effort, but effort of will is the primary one in terms of folk relevance. Making a conative effort is trying to overcome a conative resistance, which is a contrary desire. Trying to overcome a contrary desire is trying to perform an action that the agent intrinsically desires not to perform because it is unpleasant to perform it for her. My focus will be on explaining the nature of conative resistance, but I will not investigate the nature of the power(s) we have to overcome contrary desires.

9.1.1. Trying to Do what You Desire not to Do

The aversion-based view of effort maintains that making an effort is trying to do what one finds aversive to do. I reckon that the aversion-based definition is not so far from capturing the essence of mental effort. Indeed, making a mental effort is basically trying to do what one desires not to do, to the extent that it is unpleasant to do it. Making a conative effort is trying to perform an action that one intrinsically desires not to perform because it is unpleasant to perform it. There are many reasons why we try to perform actions we are averse to: our parents or society force us to; we do it because we think it will bring us some further benefice later; or we do it because we like the struggle. In any case, it seems quite common that we have intentions and goals whose satisfaction requires us to do something that we desire not to do, something that we don't like or that we are not motivated to do. The conditional definition of conative effort is the following:

> Intention: the agent desires *q* and believes that *q* will obtain if she performs an action *p*.
> Contrary desire: the agent intrinsically desires not to *p* because *p* is unpleasant for her.
> Conative Effort: the agent tries to *p*.

9.1.2. Motivational Resistance

An effort is an attempt to overcome a resistance. A conative effort is an attempt to overcome a conative resistance, that is, the resistance of some desire. I call *contrary desires* the desires that constitute the resistance to our mental efforts. They have four characteristics. First, the object of a contrary desire is the present ongoing behavior of the agent, or "first-order action". A contrary desire is about what one does; it is about an action in some minimal sense. In this minimal causative sense, one can do many things. One can exercise one's body, such as in running a marathon, climbing a pass, doing push-ups, or maintaining a given steady position. One can exercise one's attention, such as focusing on a difficult or boring text. One can exercise one's intellectual capacities, such as trying to explain some thoughts or defending a particular position. One can exercise the capacity to make voluntary decisions, to resolve to a certain course of action, to initiate an action as a result of a practical syllogism.

Second, the contrary desire presents its object in a negative way. Not only is it about what one does; but it also motivates to give up what one is doing. Regarding this particular point, I assume that agents can try not to do something and that such attempts are actions. For instance, one can try not to smoke. Contrary desires also pertain to this type of negative behaviour. If an agent tries not to do something (for instance, not to smoke), the contrary desire will represent what the agent is trying not to do (smoking) in a positive way. We can indeed distinguish repressive from productive conative efforts. A productive conative effort is an attempt to do what one desires not to do (for instance, trying to read Hegel). A repressive conative effort is an attempt to not do what one desires to do (for instance, trying not to smoke). Both are perfectly equivalent: they just refer to two opposite dynamics of effort.[80]

Third, a contrary desire is immediate. It means that it can be satisfied immediately, that is, without doing anything else. During an effort of will, we try to overcome a contrary desire and a contrary desire has the property of being immediately satisfiable. The agent does not need to perform any means-end action. This third characteristic logically follows from the first two ones. First, a contrary desire is about the action that the agent performs. It is about what you do. Second, a contrary desire represents in a negative way the action that you do: it is a desire to give up what you are doing. Consequently, it can be immediately satisfied. The agent just has to stop what she is doing. If you are focusing on a difficult mathematical problem and that paying so much attention to it becomes unpleasant that it motivates you to stop, then you just have to stop to satisfy the desire to give up.

[80] I will explain what the formal dynamics of effort are (namely, repressive and productive; igniting and persisting) during the last part.

Fourth and finally, the contrary desire is an intrinsic desire. It is an intrinsic desire to the extent that it is about the agent's current behaviour and that this behaviour is unpleasant. I here assume a meaning of unpleasantness according to which unpleasantness is characterized by its intrinsic negativity for the phenomenally conscious agent. Unpleasantness refers to the negative valence of a lived-experience; and I assume that agents are intrinsically motivated to get rid of such unpleasantness. I also assume there can be many species of unpleasantness: physical pain, exhaustion, discomfort, uneasiness, shame, guilt, unsafeness, fear, etc. A contrary desire is an intrinsic desire to stop what the agent is doing and its intrinsicality is derived from the unpleasantness of the action.

Let's use the marathon example. The runner is performing an action, which is running, in order to reach a goal that is finishing the marathon (this action happens to be a bodily effort, but it is not relevant for the current topic). For most agents and in normal circumstances (that is, superheroes, drugs and zombies left aside), running a marathon normally requires making a conative effort because some contrary desire occurs. First, the agent experiences some occurrent desire, which is about the very action she is performing (in this case, running in order to complete a marathon). Second, the desire represents the current action in a negative way: it is an aversion for the action that is being performed, it is a motivation to give up the current action, because it is unpleasant. In this particular example, the unpleasantness of running the marathon is causally explained by physiological facts about the human body. Running for a long time causes muscular pain and global fatigue, two unpleasant feelings whose unpleasantness plays a functional evolutive role. Third, the desire to stop running can be immediately satisfied. It is a desire to stop running the marathon. Consequently, it does not require any means-action to be satisfied. The agent just has to stop running. Fourth and finally, not satisfying this desire is unpleasant. It is unpleasant to not satisfy the immediate desire to give up running because continuing to run is unpleasant.

> Conative Resistance: a conative effort is an attempt to overcome a conative resistance, that is, a contrary desire. A contrary desire is an intrinsic and immediate desire to give up the action the agent is doing because its performance is unpleasant:
>
> (i) The object of the desire is an action that the agent is performing (*object*),
> (ii) The desire represents in a negative way the action: it is a desire to stop what the agent is doing (*negativity*)
> (iii) The desire can be satisfied immediately because no means-action is required, the agent just has to stop (*immediacy*)

(iv) It is an intrinsic desire because it is a desire to stop an action that is unpleasant, and that the unpleasantness of an action one does is an intrinsic motivation to give it up (*intrinsicality*)[81]

A conative effort is an effort on oneself: it is an attempt to do what one is motivationally determined not to do. Having a contrary desire is, for an agent, being intrinsically motivated to give up what she is doing. It seems highly plausible to assume that when an agent is intrinsically motivated to give up what she's doing because it is unpleasant, the default behaviour of the agent is to give up what she is doing. By default, when you experience a contrary desire against what you are doing, you will stop what you are doing. Thus, you need to make an effort to prevent the contrary desire from determining your actual behaviour.

A conative effort is an attempt to perform what one is intrinsically motivated not to perform; it is an attempt to overcome a contrary desire.[82] The agent is determined to stop what she is doing, as she can stop right away and is intrinsically motivated to do so. She is intrinsically motivated to do so because the action she performs is unpleasant. Now, the sources of the action's unpleasantness can be manyfold. Here, let me just note that it can be explained by the intrinsic characteristics of the action in relation to the agent, but also because of extrinsic and relational characteristics of the action. For instance, studying needs not be unpleasant in itself; but studying on a beautiful Friday night when one's friends are having a good time, probably is (Kurzban et al., 2013).

Conative effort: a conative effort is an attempt to overcome a contrary desire, that is, the attempt to perform an action that the agent intrinsically desires not to perform because it is unpleasant for her.

[81] Much can be said about why a particular action is unpleasant for a particular agent. I do not investigate this particular question here.

[82] The dynamics of formal effort are the same for conative effort. One can make a conative effort to try to begin an action one desires not to begin (productive effort of ignition); one can make a conative effort to try stop an action one desires not to stop (repressive effort of ignition); one can make a conative effort to try to continue an action that one desires not to continue (productive effort of persistence); and, finally, one can make a conative effort to try not to make an action that one desires to perform (repressive effort of persistence).

9.2. Conative Effort as a Second-Order Mental Action

The token-puzzle of effort is the question as to whether effort is an action or the property of an action. My position is the following: an effort is an action; but an effort can be part of a bigger global action and, as such, a mereological property of this global action. During the previous chapter, I suggested that we should see bodily efforts as basic parts of physical agency. When the pole-jumper does her thing, she makes a bodily effort during the jumping, but not during the falling. In this chapter, I want to motivate the view that efforts are actions in their own right to the effect that a conative effort is an action in its own right. Let's recall the token-puzzle. We saw that there is a tension between the property view and the identity view of efforts. If agency is the general encompassing category of efforts, what is their exact metaphysical nature: is an effort identical to an action, or is it just the property of action? So far, I have mostly dodged the question as the Aristotelian methodology gave me the required flexibility to accommodate both within the same agentive category. In that framework indeed, we can ask whether effort specifies action in terms of *having a specific property* (effortfulness, being done with effort or effortfully) or in terms of *being a specific action*. I shall now commit to the identity view.

Let's use the marathon example. The agent faces conative resistance while she's running it, as the pain in her legs and her general state of fatigue motivate her to give up. She is intrinsically motivated to give up due to the fact that there is an immediate and intrinsic reward to giving up, which is to suppress the pain and the unpleasantness of running. But she pushes through, at least for the time being. She makes an effort of will to persist in running despite the intrinsic desire to give up running. How many actions are going on here? The first observation we should make, is that ordinary language does not settle the debate. Indeed, we can describe her effort in both ways. In terms of property, we can say that she runs effortfully or that she runs with (great, intense, little…) effort. If we take this expression at face value, it entails that the agent is not doing two things; she is only doing one thing in a certain way. Namely, she is running, in an effortful manner, such as I could talk *aggressively* or eat *fast*. But if we think in terms of effort being an action, we can say that the agent makes an effort to persist in her running. So, we can say with the identity view that making a conative effort is performing one specific action, which is trying to overcome a contrary desire. Or we can say with the property view that acting in a conatively effortful manner is to perform an action in a conatively effortful way.

The benefice of the property view is twofold. First, it is more economic ontologically speaking since there is only one action, which is running the marathon in an effortful way. It could also be phenomenologically more intuitive, since the agent may not have the experience of doing two things. She does one thing, running, which she does effortfully. The identity view has the advantage, on the other hand, to explain the fact that the agent is nevertheless doing two things in some sense, for she

deploys two distinct capacities to reach two distinct goals. On the one hand, she deploys the physical capacity to run in order to cross the line. But she also deploys the mental capacity to exercise willpower (assuming this is the capacity needed to overcome a temptation) in order to persist in the running, that is, to not give in to the tempting desire. There are indeed, I contend, two actions: the running, and the effort. The effort aims at enabling the running to continue, the running aims at bringing it about that she crosses the finish line. The agent runs: she exercises the physical capacities of her body in order to reach the finish line. But she also strives: she exercises the willpower capacity of her mind in order to not give in to the temptation, to not make the decision to give up. There are two actions, one being mental and one being physical, constituted by the deployment of different capacities, and aiming at different goals.

To conclude, my general motivation for the view that efforts of will are actions is, thus, that efforts of will consist in specific 2nd order action: they are mental actions that have other actions as object. In the marathon example, there is a 1st order action (running) that requires the performance of a 2nd order action (overcoming the temptation to give up). So, there seems to be two actions.[83] I, however, also propose a reconciling strategy for the token-puzzle and the antinomy between the property-view and the identity-view. This strategy is grounded in the assumption that "little" actions can compose bigger actions. From that, it follows that an effort can be a part of a bigger action. But if we an effort can be a mereological part of a bigger action, then an effort can be identified as a property of the bigger action. When it comes to efforts of will, the idea goes, the agent does one "big" action (running the marathon with effort), which is composed of two "littler" actions (the physical action, running; and the mental conative effort, the attempt to persist in the running).

[83] When it comes to efforts in general, there is also another reason to maintain that efforts are actions. This reason is that if we want to capture the exact space that efforts occupy in our agency, it is better done if we attribute some specific function and end to them. I will come back to this point one last time when I lay out the formal account of effort and discuss their formal end.

9.3. Determinism and Libertarianism

The agent, when it comes to conative efforts, struggles with some contrary desire that she tries to overcome. The contrary desire has determined her to adopt a behaviour that she disapproves at some level. The object of the agent's effort is her own behaviour. The contrary desire and the agent's effort pertain to the same object, which is the agent's actual behaviour. The contrary desire determines the default behaviour of the agent –for instance, giving up the marathon. This default behaviour is incompatible with some goal that she has –for instance, finishing the marathon. Her effort is her attempt to prevent the resistance (the contrary desire) from causing its result. In so trying, she aims at substituting the resistance with herself. She tries to prevent the contrary desire from determining her actual behaviour, which it'll determine by default. To do so, she exercises some power. She tries to substitute the resistance of the contrary desire with her effort, as the determinant of her actual behaviour.

Now, the crucial question is: what is the power or capacity she exercises during her effort? Is it her will, her reason, one specific desire? One function of her brain? Social pressure, norms, culpability? The moral law? The will to destroy, the will to create? Love, hate? This is the crucial question of the nature of the power(s) that we exercise during our conative efforts. I shall merely raise it. This is one crucial question, which is that of the nature of the power(s) of the mind that can overcome contrary desires. There is another and related question, which is that of the very possibility to overcome contrary desires. After all, there is a clear sense that a successful conative effort requires that the agent does what she least desires to do (for instance, keeping running) instead of doing what she most desires to do (just giving up). But many have defended a law of desire according to which one can only do what one desires the most, in situations of motivational conflict (Clarke, 1994; Gert, 2005).

This question ultimately touches on the question of determinism and freedom of the will. Here again, I shall merely raise it. To conclude on that point, I shall quote William James writing on the topic, for four reasons. First, he clearly endorses an agonistic and conative view of mental effort according to which a mental effort is the act through which the agent consents to a painful course of action that she's determined to give up. Second, he gives well-written examples that are worth quoting. Third, this quotation illustrates nicely how we shall now move from the question of the definition and nature of effort to the question of the possibility of successful conative efforts. Finally, his account also gives illustrative weight to the view that a conative effort has a specific end and is a specific action of its own:

> "What does the effort seem to do? To bring the decisive volition. What is this volition? The stable victory of an idea, although it may be disagreeable [or] the permanent suppression of an idea

although it may be immediately and urgently pleasant. What do we mean by "victory"? The survival in the mind in such form as to constitute unwavering contemplation, expectation, assent, or affirmation. What do we mean by "suppression"? Either complete oblivescence, or such presence as to evoke the steady sentiment of aversion or negation.

Volition with effort [= actions that are or take efforts] is then incidental to the conflict of ideas of what our experience may be. Conflict involves those strange states or general attitudes of feeling, which when we speak logically or intellectually, we call affirmation and negation, but when we speak emotionally, we call assent and refusal. […]

In the dentist's chair, one idea is that of the manliness of enduring pain, the other is that of its intolerable character. We [make the effort to] assent to the manliness, saying, "let it be the reality", and behold, it becomes so, though with a mental effort exactly proportionate to the sensitiveness of our nerves. To the sailor on the wreck, one idea is that of his sore hands, and the nameless aching exhaustion of his whole frame which further pumping involves. The other, is that of a hungry sea ingulfing him. He says, "rather the former!" and it becomes reality, in spite of the inhibiting influence of the comparatively luxurious sensations of the spot in which he for the moment lies. To the sinner in the agony of his mind, one idea is of the social shame and all the outward losses and degradations to which confession will expose him, the other is that of the rescue from the damned unending inward foulness to which concealment seems to doom him. He says to the confession "fiat! With all its consequences", and sure enough, when the time comes, fit, but not without mental blood and sweat.

Everywhere the difficulty is the same: to keep affirming and adopting a state of mind of which disagreeableness [= unpleasantness] is an integral factor. The disagreeableness need not be of the nature of pain; it may be the merely relative disagreeableness of insipidity." (James, 1880, pp. 22-4).

9.4. Effort is Only Effort when it Begins to Hurt

Making an effort of will is trying to overcome a contrary desire; that is, it is trying to perform some unpleasant action the agent intrinsically desires not to do. During the previous chapter, we saw that the resistance-based account of bodily effort justifies one side of the two antinomies about effort: with respect to the type-puzzle (are all actions, efforts?), it justifies the idea that all (physical) actions are (bodily) effortful; with respect to the phenomenological puzzle (are all efforts, felt?), it justifies the idea that only some (bodily) efforts are felt. The resistance-based account of conative effort justifies the other side of these two little antinomies. With respect to the type-puzzle, it justifies the idea that only some actions are (conatively) effortful; with respect to the phenomenological puzzle, it justifies the idea that all (conative) efforts are felt. Not all actions are conatively effortful because not all actions are unpleasant and generating a desire to give them up. But all conative efforts are felt since they essentially entail the experience of some unpleasantness, which is by definition essentially felt. In this last section, I consider the objection that some may doubt that effort is essentially unpleasant. In other words, some may refuse the intuition that "effort is only effort when it begins to hurt", as Ortega y Gasset wrote (quoted in Massin, 2017, p. 20). It is true that not all efforts are unpleasant, since bodily efforts are efforts that are not necessarily unpleasant. But I maintain that all conative effort is unpleasant. In this last section, I will motivate this claim by showing how many types of actions can be unpleasant and, because of that, require an effort of will to be successfully performed. I will also stumble on two occasions where it seems that the agent can make an effort to overcome a resistance that is neither a contrary desire, nor a mechanical force: attentional effort, and intellectual efforts. But I will maintain that those are not efforts of will and that any effort of will is unpleasant.

9.4.1. Making Painful Decisions

One may object that we can make efforts whose object is not a first-order action. For instance, the objection goes, we can make efforts to make a difficult decision. To this objection I shall reply that making a decision is already acting. I'm not saying that making a decision necessarily is an effort. But at least some decision-making processes are. In a decisional effort, the agent intends to make a decision. For instance, she desires to choose between such and such lifestyle; like between studying law or philosophy. She then considers each option: she weights them, she finds pro and contra reasons for each option, she introspects herself, she makes practical syllogism, she speaks about it with friends, she learns about different fine-grained options, she tries to imagine several possible outcomes, etc. This clearly seems an

agentive process, since the agent exercises several capacities (to reason, to imagine, to weight options, to speak with people and ask for advice…).

Making a decision is, or at least can be, an action (some decisions can be made "in us"). But some decisions are unpleasant to make. A decisional effort is required whenever the decision is painful to make, that is, whenever the agent is intrinsically motivated not to make the decision. There are many reasons why we don't want to make a decision: the fear of losing control, the lack of sufficient information, the refusal to give up one option, the very consequences of that decision, etc. In a decisional effort, the agent instrumentally desires to perform a certain action, which is making a decision. But she also intrinsically desires not to perform that action, she doesn't want to choose, to the effect that it is unpleasant at some level to choose. In this example, the unpleasantness may come from the scariness of making such a decision.

> Decisional effort: making a decisional effort is making a conative effort to make an unpleasant decision, that is, a decision that the agent intrinsically desires not to make.

9.4.2. Cognitive Effort and Conative Effort

So far, I have mostly used the example of a physical action (running the marathon) requiring an effort of will. But mental actions too can require an effort of will. For instance, the mental action of making a decision can require an effort of will. So does *focusing*. I here only refer to voluntary focus, that is, to the exercise of top-down attentional focus. The point I want to highlight is that exerting focus can be unpleasant. But when focusing becomes unpleasant, the agent must make an effort of will to persist continue focusing. When it is unpleasant to focus, the agent intrinsically desires not to exercise top-down attentional focus. Now, there is a complexion here, which is that attention is sometimes identified with a sui-generis effort, even when it is not unpleasant. In fact, we need to distinguish three situations: (i) the simple exercise of top-down attention, which is not unpleasant, and which does not necessarily entail any resistance; (ii) the exercise of top-down attention to overcome some perturbating factors – that is, the exercise of cognitive control; (iii) the unpleasant exercise of attention and cognitive control. There is no effort in the first situation; there is an *attentional effort* in the second context (that is, cognitive control); and there is a conative effort in the third context. This threefold distinction is important to clarify a confusion at the heart of the cognitive control research program.

Simple top-down attention just is the exercise of a particular mental capacity. I assume that it is not essentially associated with a particular resistance. But simple top-down attention should not be

identified with cognitive control. Cognitive control is the performance of some mental actions of control, which can be, but are not necessarily, mental acts of attention. The cognitive control theory was introduced during the chapter on the feeling of mental effort. On that occasion, we saw that there is a tension between the view that mental effort just is cognitive control, and the view that mental effort is cognitive control only if it generates the "unpleasant feeling of mental effort". My proposal is that we should distinguish cognitive control, which can be conceived as a cognitive effort; from the conative effort that is required to persist in cognitive control when it becomes unpleasant. There are two claims here: first, that cognitive control is an attempt to overcome some resistance; second, that the "unpleasant feeling of mental effort" that prolonged exercises of cognitive control can generate, is a contrary desire.

First, we can conceive cognitive control as a sui-generis effort –let's call it "cognitive effort". Cognitive control refers to the performance of control actions in order to inhibit some problematic spontaneous tendency, such as the tendency to say the colour of the ink rather than the word during a Stroop task. But such a spontaneous tendency can be identified with a mental resistance. The agent exercises cognitive control to overcome the resistance of some mechanism in her brain. There is, however, no conative effort involved. Conative effort only begins when the exercise of cognitive control generates the "unpleasant feeling of mental effort" (to use the words of the cognitive control research program). Only at that point, is the agent motivated to stop focusing, to stop attending to some items of her environment or in her consciousness. Cognitive effort, as well as top-down attention more generally, starts to require a conative effort when it becomes unpleasant. What researchers in the cognitive control theory call "the feeling of mental effort" is in fact the feeling of a contrary desire: the feeling of a desire to give up what the agent is doing because it is unpleasant. In this context, it is a desire to give up cognitive control because it is unpleasant (because, the cognitive control model says, it is starting to consume too much attentional resources).

> Cognitive effort: the exercise of cognitive control, that is, the attempt to overcome the resistance of a spontaneous reaction.

> Conative (attentional or cognitive) effort: top-down attention and cognitive effort require a conative effort when their exercise becomes unpleasant, that is, when the agent is intrinsically motivated not to exercise top-down attentional focus or cognitive control because it is unpleasant to do so.

I accept that investing cognitive control to inhibit a problematic automatic response formally counts as an effort. Indeed, we shall see during the last part in more detail what the formal meaning of the proposition that efforts are attempts to overcome resistive powers, means. Roughly, it is to try to prevent some power from producing a certain effect, this effect being incompatible with some goal that the agent tries to reach. Consequently, we can maintain, inside the resistance-based framework, that trying to inhibit a prepotent response is an effort. The agent, during such efforts, tries to overcome the resistance of some prepotent response. But I maintain that we should distinguish conative effort from cognitive effort\control because they are two types of mental processes aiming at solving two different kinds of problems. Cognitive control is necessary to solve *conflict tasks-like situations*, when a *default response* conflicts with the agent's goal. Conative effort, on the other hand, is necessary to solve *motivational conflicts*, when an occurring and satisfiable *contrary motivational episode* determines the agent to give up the first-order action she is performing.

In broader terms, neither attentional focus, system 2 exercises nor cognitive control exercises are conative efforts by themselves. But they require conative effort when their exercises become unpleasant. Their exercises become unpleasant for reasons that the cognitive control theory has shed light upon, which is that such control actions are costly. They costliness can be explained by the fact they rely on the mobilization of limited metabolic (glucose), computational (attention and working memory) or extrinsic (time) resources (Kurzban et al., 2013; Kurzban, 2016; Musslick & Cohen, 2020) or several of these factors (Székely & Michael 2021).

9.4.3. Physical Effort Correctly Understood

I have already touched on the topic of physical effort several times. I shall outline three points. First, physical effort correctly understood is not reducible to bodily effort. Bodily effort is the exercise of one's bodily power to overcome mechanical resistances in one's environment. What we call physical effort really is a bodily effort that requires a conative effort. For instance, imagine the difference between a real marathon runner and a zombie-like case of marathon running. Both perform a physical action, which we call "running", in an institutionalized way that we call "marathon".

This physical action takes multiple bodily efforts: each time the runner lifts her legs and arms, she overcomes gravity. She may also make bodily efforts when her legs move down towards the ground if she controls the speed at which they go down. The difference between the runner and the zombie runner is that the zombie runner will not experience any motivation to give up, whereas the runner normally will. But when the human runner does experience contra motivations, she then finds herself

having to make a conative effort to persist in her running (in her mechanically effortful physical action, to be precise). Bodily effort is common, often automatic and unfelt, and not unpleasant; physical effort is felt and unpleasant because it is a conative effort directed at the performance of an unpleasant physical action.

The specificity of physical efforts, in contrast to other conative efforts, is that its object is a physical action, and that the performance of this physical action generates an intrinsic motivation to give it up. The two most common contrary desires at stake in physical effort are pain and fatigue. The more you get fatigued, the more intrinsically motivated you are to give up. Many physical efforts are also painful: they elicit painful feelings in one's muscles, joints and lungs. Although fatigue and pain are the most common motivating resistances at stake in physical effort, they do not exhaust the spectrum of contrary desires one faces in physical effort.

A physical effort is above all a bodily action that the body commands to stop, whether it is through fatigue, pain, thirst, hunger and yet other feelings. For instance, many sports require to perform movement that the agent fears to perform. In such cases, the motivational resistance is neither pain nor fatigue, but fear. It can be the fear of a high consequences jump, a fear that is common in many extreme sports but also in pole jumping for instance. Less dramatically, it can also be the fear of performing a movement that implies to brutalize the body, that is, to make a movement that the body represents as a potentially dangerous movement for functional integrity.

> Physical effort: a physical effort is an attempt, by the agent, to perform a physical action that she is intrinsically motivated not to perform because it is unpleasant to perform it (eg., tiring, painful, hurtful…)

9.4.4. Long-Term Effort

So far, I have considered "isolated", "one-short" efforts so to speak. Those efforts are attempts to do what one is motivationally determined not to do; or to not do what one is motivationally determined to do. But they do not aim at *changing* what the agent is determined to do or not to do. However, there seems to be certain efforts that aim precisely at that. We may call them "long-term efforts", "efforts to reform oneself", "efforts to work on oneself" or "transformative efforts".

These efforts are conative efforts because they do consist in the agent struggling with her own desires. Their specificity concerns the thickness of their goal. While a short-term conative effort aims at replacing the default determinant of her behaviour on one occasion, a long-term conative effort aims at

replacing a default determinant of my behaviour in general. A short-term conative effort, for instance, aims at making it the case that my behaviour on one occasion is determined by my will to finish the marathon race, instead of being determined by my will to stop the physical pain and surrender to the increasing fatigue.

A long-term conative effort aims, for instance, at making it the case that my behaviour is not determined in general by an addiction, but by something more positive. It is an attempt to replace some conative power, which determines my behaviour by default in certain circumstances, by another power that I favour. While a conative effort is like a battle; a transformative effort is like a war. A short-term conative effort aims at preventing a certain power from controlling the battlefield at a certain time; a long-term conative effort aims at destroying the capacity of the adverse army to rule on one's territory. I shall call such effort transformative efforts, in the sense that they aim at transforming the agent:

> Transformative effort: a transformative effort is an attempt, by the agent, to substitute the habitual default determinant of her behaviour in certain circumstances, with another determinant.

A long-term effort is an attempt to transform oneself. It is not only an attempt to not act as one is determined to act; it is an attempt to change what one is determined to do. More precisely, it is a long-term attempt to change the powers (desires, drives, beliefs, habits, skills…) that determine one's default expected behaviour. But we must distinguish two ways to transform oneself. One first way to transform oneself is to actualise, through repeated exercises, the basic *dispositions* that one finds in oneself. These dispositions may be natural or social, but the point is that they are already there. This kind of transformative process aims at developing what is already there, albeit qua potentiality. The agent actualises what waits to be actualised. She does not try to overcome herself; she tries to develop herself merely.

The second way to transform oneself is through a transformative effort properly speaking. It does not consist in actualising the dispositions that are already in oneself. On the contrary, it aims at preventing certain dispositions from developing and manifesting themselves. On the repressive side, a transformative effort is an attempt to prevent a certain disposition from developing and manifesting itself; on the productive side, it is an attempt to substitute a new disposition to the one that was there initially. A transformative effort implies to go against one's nature: instead of developing one's dispositions, one tries to change one's dispositions.

Now, "one's nature" needs not refer solely to the natural dispositions of an individual, understood as those dispositions she finds in herself at birth. "One's nature" refers to one's dispositions at the point

in life when the agent decides to try to transform herself. One can try to overcome dispositions that have been developed in her early childhood, but also dispositions that developed during later social interactions. In fact, one could even make an effort to overcome the dispositions that one has acquired through an anterior transformative, long-term effort.

9.4.5. Intellectual Efforts

I have been defending the idea that efforts of will are essentially unpleasant by showing the many ways in which actions can be unpleasant. I now want to show that intellectual actions too can be unpleasant. But just like I have acknowledged that we can identify cognitive control with a sui-generis resistance-based species of effort, I will also acknowledge that we could identify a sui-generis resistance-based intellectual species of effort. But in this penultimate section, I shall mainly explain how we can account for intellectual efforts in terms of conative effort.

I) A Conative Effort Like Any Other?

First reply. An intellectual effort is an effort whose object is an intellectual activity: the explanation of a phenomena, the formulation of a law, the development of an argument, a scientific experiment, and so on. What is the resistance to the performance of such activities? A first view just is that intellectual efforts often is physical or attentional effort. After all, it is often because of fatigue and exhaustion that we are intrinsically motivated not to write a paper, not to continue a discussion, not to persist in the reading of a book. Such efforts are not fundamentally different from any other conative effort. The agent is tired and desires to give up what she's doing, or to not start doing it. Sometimes, we would just prefer watching TV and going for a beer than reading Kant. Any intellectual work takes such conative effort, unless one only relies on inspiration.

II) A specific Conative Effort: Overcoming what One Desires to Think

Second reply. But there might also be something more specific to certain intellectual efforts. A second view is that we can be intrinsically motivated not to perform a certain intellectual activity. That is, we may be motivated not to draw a certain inference or conclusion; we may be motivated not to revise a certain belief; we may be motivated to maintain a certain belief against evidence. There are many reasons to account for that fact. The conclusion that evidence forces us to draw may contradict

the entire system we have built, thus commanding a costly revision we want to avoid. It may contradict core beliefs that we have, which are really unpleasant to revise. There may be an attachment to certain beliefs, whose revision is akin to the performance of a painful physical action.

This view of intellectual effort finds support in Bachelard's notion of "epistemological obstacle" (Bachelard, 1975). Bachelard tries to make the "psychology of the scientific mind". He calls epistemological obstacles certain natural tendencies of the human mind. Those tendencies threaten the advance of scientific knowledge. The first epistemological obstacle is ordinary experience which "translates needs into knowledge" and the first psychological step of scientific inquiry is to get rid of our ordinary way of thinking about the world. Another epistemological obstacle, which is specific to established scientific minds, is what he calls the *conservative instinct*, which he contrasts with the *formative instinct*. The conservative instinct is the tendency to focus on what confirms one's ideas, rather than seeking evidence questioning one's ideas. Such a conservative instinct suggests something like a specific intellectual resistance. My suggestion is thus that we can identify contrary desires, conative resistance, that are specific to intellectual agency: desires that pertain to certain intellectual acts, and which resists the agent's attempt to progress towards a better understanding of the world.

III) The Resistance of Reality?

Now, it is true that we can have the feeling of being resisted while we try to understand something, although we do not experience any contrary desires. There seems to be a feeling of resistance, of some power going against our attempt. But it is neither a mechanical resistance, nor is it the resistance of some contrary desire. One possible view is that intellectual effort may place us in front of a different kind of resistance, which may be the resistance of reality itself to our attempt to grasp with our intellectual capacities.

9.4.6. Interindividual Efforts

Finally, I shall say a few words about interindividual efforts. After all, I have merely spoken about efforts on oneself and effort on the external mechanical world. But it could also be the case that we make efforts on others. We try to overcome ourselves, the world, but also others. My proposal is that efforts are externalized bodily and conative efforts: bodily and conative efforts against other human beings.

I) The Mechanical Resistance of Others

A bodily effort is necessarily externalized, to the extent that the mechanical resistance comes from the external world. But the external world needs not be reduced to gravitational forces, inertia, air molecules and the like. It also integrates other human beings and other agents more generally. Arm-wrestling, for instance, just is a bodily effort against the mechanical resistance of someone else. In such efforts, the resistive relation is symmetrical in the following sense. If I make an arm-wrestling contest, I make a bodily effort to overcome the mechanical resistance of my opponent. But the mechanical resistance that my opponent exercises is identical to her own bodily effort. This is different if I make an arm-wrestling contest with a robot, to the extent that the robot would not be acting intentionally. Mechanical resistance to our bodily effort is most often the resistance of the inert environment, but it can also be the resistance of other human beings and other living agents more generally.

II) The Dialogic Resistance of Others

So far, I have only spoken of internal conative resistances. I have spoken only about the resistance of the agent's own intrinsic desires to her attempts to reach certain goal. But conative resistance needs not be internal. Namely, we can be resisted by conative powers that are outside our own mind, namely, in the mind of others. Consider the following example. I have proposed to define intellectual efforts as efforts whose object is a certain intellectual behaviour, which we may call "thinking". Now, thinking is both a personal and an interindividual activity. Thinking is a dialogue of the mind with itself, but also with other minds.

But just like the agent can make an effort to draw a conclusion when she is intrinsically motivated to avoid drawing that conclusion (or a belief, or the revision of a certain belief, or the modification of a value-system…), likewise, one can try to make someone else admit a conclusion (or a belief, or the revision of a belief) that this agent is intrinsically motivated not to accept. Formally, an agent is arguing for the conclusion that S is p. But she is arguing for the conclusion that S is p to the face of another agent who is intrinsically motivated not to accept that S is p. The resistance is still conative, but externalised.

III) The Conative Resistance of Others

Conative efforts are, first and foremost, efforts of will against one's own desires. But we can also make an effort against the desires of someone else. For instance, we can try to convince someone to do something she is intrinsically motivated not to do; we can try to convince someone to believe something

she is intrinsically motivated not to believe; we can try to force someone to sign a document she does not want to sign, etc. Now, the capacities we deploy when we make conative efforts on others may be distinct on some occasions from the capacities we deploy when we make efforts on ourselves. Such efforts may be illegitimate in some circumstances, to the extent that one may not have good justifications for forcing someone to do something she does not want to do. But it may also be perfectly legitimate in other circumstances, like in the education of children for instance.

9.5. Conclusion

I have now developed the dualistic resistance-based account of bodily and conative effort. These two definitions enable to justify the unifying power of the resistance-based approach with respect to two puzzles about effort's nature. The type-puzzle is that we tend to say both that all actions are efforts, but also that only some actions are efforts. The feeling-puzzle is that we both say that efforts are essentially felt and that they are not essentially felt. I have proposed to solve them by distinguishing conative from bodily efforts: all physical actions require a bodily effort, which is not essentially felt; while not all (physical, mental, …) actions require a 2nd order, conative effort act. But when they do, the conative effort is essentially felt. I am now in a position to justify these assumptions.

Bodily effort is not essentially felt because it is possible to exercise one's bodily power without having any experiential access to it. All physical actions, at least in this world, require a bodily effort because physical agency always require overcoming air molecules, gravity or water molecules. But we don't have a feeling of bodily effort whenever we physically act. Conative effort, on the other hand, is essentially felt since it is the attempt to perform a 1st order action that is unpleasant (in virtue of which the agent is motivated not to perform it) and that unpleasantness is essentially felt. But many actions don't require to make a conative effort, since many actions are not unpleasant for us to perform.

Finally, I have also suggested a way to solve the token-puzzle. On the one hand, we are tempted to say that effort is an action; on the other hand, ordinary language also enables to see effort as the property of an action. I have argued that we should see efforts, especially efforts of will, as genuine actions. But as long as we assume that some actions can compose bigger actions, we can accept that some efforts are properties of bigger actions –they are mereological parts of bigger actions, but they remain actions in their own rights.

Now, we can turn to the last puzzle, which is the puzzle of the species of effort. On the one hand, we tend to say that there are species of effort; while on the other, we tend to admit that there is only one sort of effort. But if there are species of effort, it is unclear whether they clearly belong to the same kind, nor is it clear how many species there are. To solve this last puzzle, I will now turn to the analysis of the metaphysical, formal nature of effort. In fact, a formal definition is needed for two reasons. First, it is necessary to preserve the unity of the kind of effort once we have distinguished bodily and conative effort. Second, it is methodologically required in order to leave space for the ontological discussion concerning what powers there are and, consequently, to leave the door open to what species of effort there could be –like cognitive effort or intellectual effort, for instance.

IV. THE AGONISTIC NATURE OF EFFORT

Introduction. Effort is primarily bodily or conative effort: the attempt to overcome resistive forces or resistive desires. The ordinary notion of effort centrally refers to conative effort –to the attempt to overcome a contrary desire, in order to initiate or to persist in the performance of an action that is unpleasant. The folk notion also marginally refers to bodily efforts, which are very common and widespread, where the agent exercises the muscular forces of her body in a goal-directed way. This is the dualistic resistance-based view of effort that I have defended. This view raises a challenge: if there are two different types of effort, how can we preserve the unity of the kind effort? The worry is even more pressing considering that I have also recognized that there could be two other sui-generis efforts, namely cognitive and intellectual efforts. In this last part, I shall therefore develop a formal resistance-based account of effort. Not only does it preserve the kind effort despite there being at least two species of effort (bodily and conative ones, if not also cognitive and intellectual ones), but it also opens the discussion as to whether there are any other species of effort. In that way, the various resistance-based approaches are taken onboard. This discussion ultimately touches on what powers and agents there are, and consequently what overcoming capacities and resistive powers there are.

The formal resistance-based account is what I call the agonistic definition of effort. It is basically the claim that an effort is an action that implies a struggle –with oneself, the world, others or what have you. It is more specifically the claim that an effort is an attempt to overcome some resistance, whether the resistance is in oneself, in others or in the world. We make efforts when we try to satisfy goals that require to go against the (mechanical, psychological, intellectual, ideological…) causal determinacy of the world. I take as a paradigmatic illustration the endurance athlete who struggles with pain and fatigue, like in the context of trying to run a marathon. The agent has a general intention, which is to finish the race. However, she faces some motivational resistance along the way because pain and fatigue strongly motivate her to give up. She is (motivationally, psychologically) determined to make the decision to give up running. Her effort (of will) is what she does to persist in her running, despite being determined not to persist in this first-order activity. Making an effort is trying to change the causal determinacy of the world, to produce a causal deviation from the determined causal path that one will take by default. We do that every time we act physically (with our bodily efforts); we do it at times when we deviate from what we are motivationally determined to do (with our conative efforts).

This last part is divided in three chapters. In the first one (10), I justify the need for a formal definition, with regard to the problem of the species of effort and with regard to the unity of the kind effort. In a second chapter (11), I introduce the formal resistance-based definition, which call the agonistic

definition. I analyse the concept of resistance, and I clarify several aspects of efforts, such as their goal, object, awareness and dynamic. (12) In a third and last chapter, I reply to two objections: the objection that there can be resistance without effort (the objection that “resistance is not specific to effort”) and the objection that there can be effort without resistance (the objection that “resistance is not essential to effort”).

10. Towards a Systematic Account

There are two types of effort, namely bodily and conative efforts. But there may be other types of effort. After all, I have already acknowledged that there might be two other species of effort, namely intellectual and cognitive effort. However, it is not my intention to perform the systematic review of which species of effort there are. This is because it would require developing a systematic ontology of powers, which is obviously beyond the scope of this work. Indeed, if efforts are "struggles", attempts to overcome resistive powers, then a systematic account of effort must explain which struggles there are. But the answer requires to state what (overcoming and resistive) powers there are –which is a tremendous philosophical task. Still, to advance towards a systematic understanding of effort, I shall try to capture the formal nature of all possible efforts. In that way, we both preserve the unity of the kind effort (if there are several species of effort), but we also leave open the discussion of the substantial nature of resistance. (10.1.) The first section discusses the question of whether there are species of effort. I give two reasons in favour of a positive answer: first, there are two distinct feelings of effort; second, bodily and conative efforts have different explanatory functions. (10.2.) The second section explains why we need a formal definition of effort. There are two reasons to develop a formal account: a retrospective reason (to subsume bodily effort and conative effort under the same definition) and a prospective reason (to leave the door open to other species of effort, if any).

10.1. Are there Species of Effort?

The central discussion of this first section is whether there are species of effort –the "species-puzzle". In a first time (10.1.1.), I distinguish two general answers to that question –the unitary and the non-unitary views. Then (10.1.2.), I motivate the distinction I previously made between the conative species and the bodily species by the fact that this distinction makes sense of opposite scientific characterizations of the feeling of effort. Scientific research suggests that there are two distinct feelings of effort which, I reckon, respectively refer to the feeling of bodily effort and to the feeling of conative effort. (10.1.3.) I also give another justification for there being at least these two species, which is epistemic. Philosophers usually attribute distinct explanatory powers to conative and bodily efforts. If we want to preserve these explanatory powers, we need to distinguish bodily from conative effort.

10.1.1. Unitary and Non-Unitary Views

On the one hand, some authors defend a view according to which there is one species of effort only (Bermúdez, 2021; Bermúdez & Massin, 2023; Biran, 2001; Massin, 2017; Pageaux, 2016). These are what I shall call unitary views of effort. On the other hand, one could be tempted by a maximalist approach distinguishing numerous species of effort such as efforts of will, intellectual efforts, efforts of seduction, collective efforts, military efforts, economic efforts, and so on.

The unitary view of effort: the view that there is only one species of effort.

The non-unitary view of effort: the view that there are at least two species of effort.

There are three broad families of unitary views: the physical, the mental and the psycho-physical unitary views. One can adopt a physical unitary view, which is the claim that there is only one species of effort, which is physical effort. A mental unitary view claims that there is only one species of effort, which mental effort. A psychophysical unitary view claims that the only species of effort, is the effort of the will on the body.

The physicalist view: there is only one species of effort, which is physical effort (eg., Massin, 2017, 2022a; Pageaux, 2016)

The mentalist view: there is only one species of effort, which is mental effort (eg., Bermúdez, 2021)

The dualist view: there is only one species of effort, which is psychophysical effort (eg., Biran, 1995, 2001; Descartes, 1966)

Against those unitary views, I have defended a middle-way and commonsensical view according to which there is a physical species of effort, which I defined as bodily effort; and a mental species of effort, which is conative effort. I reject unitary views of effort for two reasons. The first reason why we need to distinguish at least two species of effort is that it enables to make sense of the opposite phenomenological profiles of the feeling of effort. Some believe that the feeling of effort is unpleasant; some believe that it is not unpleasant. I believe they don't talk about the same species of effort, for the feeling of bodily effort is not unpleasant necessarily; while the feeling of conative effort is.

Now, one could reply that one of the two claims about the affective profile of the feeling of effort just is wrong. In other words, one could maintain a unitary view of effort by defending, either that the physicalist view is correct (there is one species of effort; it is physical effort; and its feeling is not unpleasant) or that the mentalist view is correct (there is one species of effort, which is mental effort; and its feeling is unpleasant necessarily). However, neither solution is satisfactory. Indeed, the second reason why we should distinguish mental from bodily effort is that each unitary view faces explanatory shortcomings. The physicalist view cannot explain the difficulty of some (conative) efforts, such as the effort to make a hard decision or to tell a difficult truth. Conversely, the mentalist view cannot explain why the feeling of (bodily) effort is often believed to present us with the distinction between ourselves and the external world.

10.1.2. First Motivation: There Are Two Feelings of Effort

We already saw that some theories describe the feeling of effort as an intrinsically negative feeling; while some do not attribute any intrinsic negativity to the feeling of effort. On the one hand, centralists and peripheralists do not describe the feeling of effort as carrying any negative quality and valence. On the other hand, those who endorse the comparator-model suggest that it could be unpleasant, while those who work inside the cognitive control framework clearly postulate that it is phenomenally negative. I propose to reconcile these two bodies of research by seeing to them that centralism and peripheralism describe the feeling of bodily effort, while cognitive control describes the feeling of

conative effort (more precisely, the feeling of the motivational resistance, whose overcoming requires the effort of will).

I) The (not Unpleasant, not Necessarily Conscious) Bodily Species

The idea that the feeling of effort is not unpleasant, or at least not necessarily unpleasant, is defended by sport scientists nowadays. They generally endorse centralism, which is the view that the feeling of effort is realized by efferent signals (efference copies that is) moving from the brain towards the body. They argue carefully for the idea that this feeling of effort is not necessarily unpleasant and should be distinguished from unpleasant feelings such as feelings of pain, fatigue or uneasiness. For instance, Pageaux reviews the recent research in sport science about effort and argues that we must distinguish the feeling of effort from the feelings of pain and discomfort, on the basis that subjects can distinguish them. I quote him:

> "It has been necessary to wait until 2001 to demonstrate that humans are able to dissociate between perception of pain and perception of effort during physical exercise […]. In their study, O'Connor & Cook provided a clear definition of leg muscle pain (i.e. the degree of hurt you are feeling in your quadriceps only) and instructions on how to differentiate between muscle pain, effort and fatigue perception. Furthermore, these authors used two different psychophysical scales to investigate perceived exertion and muscle pain. Consequently, these authors demonstrated that subjects are able to sustain moderate-intensity muscle pain for ~15min, while being able to rate separately their perception of effort. The ability of humans to dissociate between perception of pain and effort was then observed by others, either by asking the subjects to rate their pain and effort separately during […] exercise, or by exercising at a fixed effort while reporting their perception of pain […]. Therefore, as experimental evidences have demonstrated the ability of humans to differentiate between perception of effort and perception of pain, it is clear that these two perceptions result from two distinct phenomena."

I'm not entirely sure whether the capacity of subjects to discriminate between two feelings in their ratings is a sufficient reason to conclude that these two feelings represent two distinct phenomena. But the crucial point just is that sport scientists like Pageaux do claim that the feeling of effort is not, in itself, unpleasant.

II) The (Necessarily Conscious and Unpleasant) Conative Species

On the other hand, neuropsychologists suggests that the feeling of effort is normally unpleasant, if not necessarily. The claim of the unpleasantness of the feeling of effort is central to the cognitive control theory. The feeling of mental effort is associated to the performance of cognitive control. Such control actions rely on the use of limited resources. Such resources are both important for survival and limited. Consequently, it is assumed that some mechanism must regulate their allocation. This mechanism is realized by the feeling of mental effort. When the cost of investing control becomes too high, the brain sends a signal to the conscious agent, so she switches task, or gives up control. This feeling is the feeling of mental effort ("FME"). Crucially, it plays its function role by *motivating* the agent. How does it motivate the agent? It motivates the agent by its intrinsic unpleasantness. Consequently, the agent is motivated to give up what she is doing.

> As an index of the costs of a given control strategy, an intensification of FME motivates the agent to search for alternatives to said strategy (which can be selecting a different strategy or no strategy at all). (Bermúdez, 2021, p. 6263)

The feeling of effort is hypothesized to *indicate* to the conscious agent that she is investing too much control. This "indication" must directly motivate the agent to give up control or to switch control strategy. It is because the feeling of effort is unpleasant that it motivates the agent to stop what she is doing or to reallocate her mental resources to some other tasks. If the feeling of effort was not unpleasant, it wouldn't be the conscious signal to switch task that it is supposed to be. Consequently, it wouldn't play the evolve function that it is believed to play according to this theory. Long story short, the cognitive control theory claims that the feeling of effort is unpleasant by nature or at least by function.

III) There are Distinct Species

The fact that research on the feeling of effort enables to distinguish between two different feelings of effort strongly suggest that there are, indeed, two species of effort. On the one hand, many scientists try to dissociate the feeling of effort from unpleasant feelings such as feelings of pain, discomfort and unpleasant feelings more generally. On the other side, other scientists attribute a functional role to the feeling of effort that relies on its unpleasantness. Either half of them is wrong, or they are both right but simply talking about different things. This is the position I defend. These two opposite judgments about the phenomenological valence of the phenomenology of effort do not refer to the same species of

efforts. Some must be speaking about the feeling of one species of effort; while others must be speaking about the feeling of another species of effort.

It is obvious that cognitive control pertains to mental effort, since its proponents speak explicitly of the feeling of *mental* effort. Now, I argued earlier that they tend to conflate conative effort and cognitive effort: conative effort is the attempt to persevere in performing some mental action despite the unpleasant feeling that I should stop, whereas cognitive effort just is the non-necessarily unpleasant mental control of spontaneous responses. What they call the "unpleasant feeling of mental effort", I contend, is the feeling of the motivational resistance generated by the unpleasantness of deploying cognitive control above a certain threshold. In that respect, their theory pertains to the feeling of conative effort. Their theory of what cognitive control is, however, is about cognitive effort. On the one hand, they explain what cognitive effort is; on the other, they describe what it feels like to persist in cognitive effort when it becomes unpleasant.

On the other hand, it is also relatively clear that centralists and peripheralists are interested in the feeling of bodily effort. Peripheralists argue that the feeling of effort just is the feeling of muscular tension, which is obviously the feeling of something physical, of one's body. Centralists argue that the feeling of effort is the feeling of trying to move *the body*. Although the bodily movement is not essential to effort, it is nevertheless the end of effort: effort is body orientated; it is an attempt to move the body; it is not an attempt to concentrate or to perform a mental action more generally.

So, if we take at face value these scientific theories and that we want to make sense of them, we need to distinguish at least two species of effort. This is incompatible with the unitary views, which are not entirely plausible, or so it seems. First, the physicalist view cannot explain why we have the intuition that the feeling of effort is necessarily unpleasant. Second and conversely, the mentalist view cannot explain why there is also the intuition that the feeling of effort needs not be unpleasant. One could then be tempted to opt for a psychophysical view of effort, which is a view that Maine de Biran has defended. But far from solving the problem, the psychophysical view just raises a new problem, which is the canonical problem of the causal interaction between two distinct substances. These three problems disappear if we simply distinguish conative effort from bodily effort: the feeling of bodily effort is not necessarily unpleasant; the feeling of conative effort is necessarily unpleasant; and we don't have to presuppose causal interactions between a spiritual will and a material body.

10.1.3. Second Motivation: The Explanatory Shortcomings of Unitary Views

One could reply that the opposite phenomenological profiles of effort do not constitute a sufficient reason to distinguish the mental from the physical species of effort. One could simply reply that one view must be false. Either the feeling of effort is affectively neutral, or it is unpleasant. One of the two views must be false. Let's assume that it is the good way to go. From that perspective, we need to understand whether the feeling of effort is affectively neutral or unpleasant. The two views are exclusive; one is right, the other false. I rule out the psychophysical, dualist view according to which an effort is an attempt of the will to overcome the body, on the basis that it raises the hard problem that any dualist theory faces. This leaves us with the mentalist and physicalist views. The first option is to maintain that the physicalist view is true. There is only one sort of effort, and it is the attempt to overcome some physical resistance –there is only bodily effort. The second option is to maintain that the mentalist view is true –this is only conative effort. There is only one sort of effort, and it is the attempt to overcome some mental resistance. But if one goes that road, one will face some trouble. For indeed, each option falls short of explaining basic and essential aspects of efforts.

I) A physicalist View Cannot Explain the Difficulty of some Efforts

First, consider the physicalist view according to which there is only bodily effort. The physicalist view is defended by Massin (2017, 2022) according to whom an effort is the exercise of some mechanical force against some opposite force. This physicalist view comes with some difficulties. First, bodily efforts need not be unpleasant. Exerting force with the body is not something that we are necessarily averse to do; it is not something that must feel bad. A physicalist view of effort cannot explain and must simply reject the intuition that effort is in some sense always unpleasant.

Secondly, a physicalist view cannot explain why some efforts are efforts in the first place. For instance, it seems clear that we can make an effort to make a tough decision. For instance, we can make an effort to make the decision to admit a mistake, some moral misconduct, or to perform a radical change in one's life. But it seems impossible to account for the effortfulness of making such decisions in terms of the physical force that the agent exerts. Indeed, the physicalist view of effort must explain the difficulty of effort only in terms of the intensity of the forces that the agent exercises. The more forces you exert, the longer you exert them, the more difficult your effort.

I do agree that the difficulty of bodily effort is to some degree a matter of how much force you exert, relatively to the maximum force that your body is capable of. For instance, the harder you go on the rowing machine, the more difficult it becomes. But some efforts are difficult in a manner that is not related in an essential respect to physical exertion. For instance, it can be very difficult to debate on certain topics, in a way that demands great effort (of self-control) for both locutors. It is hard to deny that we make or can make some efforts in such contexts. But it is even harder to explain such efforts in terms of physical exertion. It is much easier and more logical to go for the mental explanation. For instance, it is not because the agent exerts her body that she must make an effort when debating on a touchy topic with someone defending a radically opposite view. The effort that one makes on such circumstances rather comes from the fact that one must frustrate some strong and occurrent desires, such as the desires to stop the conversation to the extent that it is highly unpleasant. The effort comes from the mental price of such actions.

II) A Mentalist View Cannot Explain the Epistemic Power of Bodily Effort

On the other hand, those who go for a purely mental view of effort will have trouble to understand the fact that some (bodily) efforts can be performed without any unpleasant feeling. This seems to be the case indeed. Imagine you walk, swim or bicycle by a beautiful day, in top-shape and well-rested. You start paying attention to the phenomenology of your walking, swimming or cycling action. You feel the force you exert on the ground beneath your feet, or on the water surrounding you, or on the pedals of your bike. You also feel the resistance of the ground, the water or the pedals. There needs not be any phenomenological negativity here. It can be enjoyable to feel that one's body overcomes the water, ground, or air resistance. An athlete may enjoy running, swimming or cycling at low intensity for this reason.

Proponents of a purely mental view of effort have overlooked the fundamental bodily species of effort. Consequently, they have hereby also overlooked an important aspect attached to the experience of bodily effort. Indeed, it has been argued that the experience of bodily effort is an (if not the) experience that presents to the agent the distinction between herself and the external world. (see Massin, 2017, for references). There is something in the resistance to one's bodily effort that seem to indicate the independent existence of the external world. If it is true, the purely mental view of effort cannot explain it. It is however a widely recognized character of bodily effort.

III) A Dualist View Conflates the Two Species of Effort

In addition to the pure physical and mental views of effort, there is also a pure psychophysical view of effort. It is the view that an effort is the attempt of one's will to overcome the resistance of one's body; it is the exercise of a "hyperorganic power" against an "organic power". It is defended by Maine de Biran. It may be in our mind when we think pretheoretically about effort. It however does not solve the problems faced by the pure physical and mental views because it raises another problem. If we accept Biran's view, we accept that a material entity (the body) can resist the action of an immaterial entity (the will). To some materialists, this will be a sufficient reason to reject Biran's view.

But this is not the main reason why I reject Biran's view. The reason why I reject it, is that it seems to simply conflate physical and mental effort. Biran says: the body resists the will. I reply that the body resists the will only insofar as it *motivates* a certain behaviour. Our own body, our Korper, only resists us in a mental way; by motivating us, through the desires it generates. Indeed, our own body can motivate us to engage in certain behaviours. It does so particularly by generating conscious mental motivating experiences like thirst, hunger, pain, fatigue, fear and so on. There is no struggle between "my will" and "my body" in such situations, there is a struggle inside our will between some desire (for instance, persisting in a painful physical action like running the marathon) and some other desire generated by the body, representing the "body's will" (for instance, the desire to give up running).

There is also a kind of struggle that involves the body. But it is not between the body and the will; it is between the body and the world. The world resists our body: gravity resists the body when we climb; air molecules resist the body when we cycle. My proposal is, thus, that there is either a struggle between my body and the external world; or a struggle between my will and itself, that is, between my will and some contrary desires. Now it is true that "my will" sometimes struggles against a contrary desire that is a representative of the body. The body commands a certain behaviour by generating a contrary desire. But it is against the contrary *desire* (generated by the body) that we struggle; not against the body itself. Either we struggle against our own self, a kind of struggle which is necessarily unpleasant at some level. Or we struggle against the external world, a kind of struggle which needs not be painful, unpleasant or conscious.

10.2. Why a Formal Definition?

Scientific theories about the feelings of effort seem to back up the claim that there are at least two species of effort. It seems plausible that these two species are bodily and conative efforts, as they were defined earlier, for these two definitions fit well with the scientific descriptions of the respective feelings of "mental" (conative) and "physical" (bodily) efforts. So, there is some evidence that we can accept that there are species of effort. But this presses the need for a formal definition. On the one hand (10.2.1.), a formal definition will preserve the generic unity of the kind effort. On the other hand (10.2.2.), it will open the door to an "ontological exploration".

10.2.1. A Formal Definition Preserves the Unity of the Kind Effort

Distinguishing a physical species of effort (in terms of bodily effort) from a mental species of effort (in terms of conative effort) effort enables to solve three problems at once while remaining aligned with common sense. First, the purely mental view of effort cannot explain why the feeling of bodily effort is not unpleasant in itself, as many sport scientists claim. What is more, it cannot explain why many believe that the experience of bodily effort presents us with the me-world distinction. Second and conversely, the purely physical view of effort cannot explain why the feeling of conative effort is necessarily unpleasant. What is more, it cannot account for the unpleasantness of some efforts, like the effort to make a difficult decision or the effort to engage in a touchy and difficult debate with an ideological opponent. These two problems are the two sides of the same coin. Each problem disappears if we distinguish mental from physical effort and if we assume that physical effort is bodily effort, which is not unpleasant in itself while mental effort, define as conative effort, is. Now, one could object that this solution has destroyed the unity of the kind effort. To use a useful expression, the distinction between physical and mental effort could entail that effort is not a "natural kind".

The notion of "natural kind" is entangled with scientific research (Bird & Tobin, 2023). Sciences classify individuals into kinds such as, for instance, the kind "electron". There is a difference between arbitrary classes ("the class of objects weighting 100 kilos") and classes that justify non-accidental generalizations ("the class of stable subatomic particles with a charge of negative electricity"). The latter type of classes justifies non-accidental generalizations in virtue of the fact that it is grounded in the necessary properties that all its members have. The notion of natural kind helps to express the risk that threatens an attempt to produce a necessary and sufficient definition of effort. Members of a "natural kind" belong to that natural kind because they all share some (metaphysical, logical, physical…)

necessary properties. It is in virtue of having these properties that they belong to their kind; and it is in virtue of these properties that the kind in question differs from distinct kinds.

The question is: are there any such properties for effort once we distinguish mental from physical effort? Is the kind "effort" justified by the fact that all its members share some necessary properties that only efforts share? Or is "effort" a substantive term used to refer to things that in fact do not share any necessary properties beyond the fact that we call them by the same name? The expression "natural kind" is useful because it points towards the conceptual issue at stake.[84] Namely: of all the things that we call "effort", is there anything that all these efforts, and only them, have in common, necessarily, essentially? Or should we distinguish between good and bad uses of 'effort', in the sense that sometime the word does refer to genuine efforts, while sometimes it refers to something else that we conflate with effort? Or should we even go further and abandon the concept of effort, on the basis that it is not a solid concept and that it refers to multiple distinct types of things, that we should start calling by their own specific names?

The first option can be called "conservative" because they justify that we continue using the term "effort" as referring to a kind, despite the fact that it encompasses physical and mental effort. The other option is "revisionist", to the extent that it commands we stop distinguishing mental and physical effort as if they were two species of the same kind. I defend the "conservative" view, which is the conjunction of two claims: the claim that there are bodily and conative species of effort, and the claim that they belong to the same kind –namely, the kind "effort". Indeed, I'll justify that both efforts are formally exactly equivalent: they are attempts to overcome some resistance.

10.2.2. A Formal Definition is Opened to "Ontological Exploration"

The agonistic definition is the view that an effort is an attempt to overcome a resistance. It does not commit to saying what capacity the striving agent deploys; nor does it specify the substantial identity of the resistive power. It is followingly compatible with numerous substantial versions. For instance, one could argue that there is such a thing as the effort of Jacob with the angels. One could deny it, on the

[84] I use "natural kind" in quotation marks for different reasons. First, "effort", if anything, is a *conceptual* kind rather than a natural kind. Whether concepts are natural kinds is disputable (Machery, 2005). Second, one generally admitted clue of natural kinds is their inductive potential, specifically in scientific experiment. But philosophy is usually not (at least, not in this dissertation) an empirical science. It doesn't proceed to formulate laws and theories that have predictive values, and that can be tested by universally reproducible experiments. Third, the rough idea of natural kind is incompatible with a common Kantian's epistemological perspective. The idea of natural kind suggests that we can have access to the real, ontological categories of nature. However, it is doubtable whether scientific (and any) knowledge can access nature in itself –the noumena.

basis that there are no such agents as Jacob or the angels. We should distinguish the agonistic definition (that we can also call the formal or metaphysical resistance-based view) from its substantial versions. Substantial resistance-based views can be distinguished based on how they conceive of the two sides of the resistive relation between effort and resistance.

> The agonistic definition: the formal resistance-based definition of effort according to which an effort is an attempt to overcome a resistance. The definition is uncommitted regarding the substantial identity of the striving agent (the agent of effort –*who* strives) as well as with respect to the substantial identity of the resistive power (*what* resists to the striver).
>
> A substantial resistance-based view: a resistance-based view is a substantial version of the agonistic definition, that is, an agonistic definition that commits to identifying the striving agent (eg., reason, will, belief-desire complexes, etc.,) and the resistive power (eg., bodies, forces, desires, ideologies, ideas, etc.) in effort.

The agonistic, formal resistance-based definition of effort is compatible with multiple quantifications. For instance, it is compatible with the claim that the Olympians overcame the resistance of the Titans during the Titanomachy, the epic episode told by Ovide among others. However, few of us would agree that there was such an effort, to the extent that we don't accept Titans and Olympian Gods in our ontology. Less dramatically, it has been argued by Biran that an effort is the attempt of the will to overcome the resistance of the body. This claim is however also disputable, to the extent that it presumes the possibility of interactions between two distinct substances. These claims, however, are all compatible with the agonistic definition. The agonistic definition does not answer the ontological question "what efforts are there?" neither does it answer the related question "is there one species of effort or several species of effort?". But it is opened to discussion on that point, which is a theoretical advantage for it. The prospective advantage of the agonistic definition is to open, instead of closing, the door to the ontological exploration of what resistive powers we can face on our way, and which powers we deploy to overcome them. So, let's now capture the formal nature of effort.

11. The Agonistic Definition

Introduction. What is the common structure that subsume bodily and conative effort? What does it formally mean to try to overcome a resistance? This is what I shall explain in this chapter. Roughly speaking, we make efforts when we try to satisfy goals that require to go against the (mechanical, psychological, intellectual, ideological…) causal determinacy of the world. The basic intuition behind this proposal is that the concept of effort refers to agonistic agency, that is, to actions characterized by their relation to some opposition in contrast to actions that are not characterized by such opposition. In the first time (11.1.), I introduce the agonistic definition. In a second time (11.2.), I account for the formal concept of resistance. In a third time (11.3.), I clarify several aspects of efforts, such as their goal, object, awareness and dynamics.

11.1. The Formal Nature of Effort

I shall now introduce the agonistic definition properly speaking. (11.1.1.) I start with a clarificatory remark by distinguishing four distinct meanings of "effort". (11.1.2.) I then explain what metaphysically distinguishes actions that are efforts from actions that are not. (11.1.3.) I then decompose effort into five basic elements. I then give two versions of the definition: (11.1.4.) the conditional definition of effort, which expresses the three conditions that must be met for a particular action to be identified with an effort; and the agonistic definition of effort itself (11.1.5.).

11.1.1. Four Meanings of "Effort"

To begin with, it will be useful to distinguish four possible meanings of "effort" within the agonistic framework, only one of which is adequate. Think of the effort one makes during a marathon. The agonistic proposal offers the following description of the runner's effort. The running agent has an overall goal, which is finishing the race (which may also be more specific and higher-resolution, such as "finishing under 3 hours". But the agent faces some motivational resistance: she is tempted to give up, or to slow her pace down. Still, she makes an effort: she tries to overcome that resistance. For instance, she exercises willpower to continue to run (or to continue to run at the targeted pace).

"Effort" may refer to four aspects of this events. First, it can refer to the power that the agent is exercising, namely her self-control, determination, courage, endurance. But this is not "effort" properly speaking; it is the *effort-capacity*, the power manifested by the agent during her effort. Second, "effort" can and should refer to the action that the agent is performing while she tries to overcome the temptation to give up running. Her effort is her trying to overcome the temptation to give up running or to slow down. This actional meaning of effort is the correct meaning of effort.

Third, "effort" can also refer more broadly to the relation between the agent's effort and the resistance to her effort. For although external to the effort, the resistance is still essential to it. In the marathon example, the resistive relation obtains between the agent exercising self-control (her effort) and her body motivating her to give up or to slow down (the resistance). The relational meaning of effort refers, from a third-person perspective to the resistive relation between an agent's effort and the resistance to her effort. Fourth and finally, "effort" can refer to the feeling of effort, which is the consciousness by the agent of the effort she makes. In the marathon example, the agent is arguably aware of making an effort, since exercising self-control in these circumstances generally entails

consciousness. From now on, "effort" will refer exclusively to the act of effort, which refers to the attempt to overcome a resistance.

Effort-capacity: the power that an agent manifests during her effort (eg., muscular strength, self-control, reason, top-down attention…).

Effort: the attempt by the striving agent to overcome a resistance.

Resistive relation: the relation between an effort and the resistance to that effort, over the same portion of reality.

Feeling of effort: the feeling by the agent of the effort she makes.

11.1.2. From Action to Effort

Efforts are actions and each action has an object, which is the portion of reality over which the agent exercises some capacity. The goal of an action is to produce a certain change to its object. When an agent acts teleologically, she aims at causing the object of her action to adopt some behaviour –she aims at controlling the behaviour (or "becoming") of the object. For instance, a football player tries to cause a ball to follow a certain trajectory in relation to the positions and actions of the other players. To do so, she exercises her muscular power and drill skills. A teacher tries to cause her students to "become" a certain way, in that she tries to cause them to understand a particular theorem for instance. To do so, she exercises her didactic and intellectual capacities. A politician tries to cause the electors to vote for her. To do so, she exercises rhetoric, seducing and other conviction-orientated capacities. According to the causative view that was defended earlier, any action stages an agent who exercises a given power, over a given object, in order to cause this object to adopt a certain behaviour, to "become" a certain way.

The specificity of efforts is that they aim at causing some object to adopt a behaviour that contradicts the behaviour it is determined to have. The object is determined to become "*not-p*" in certain circumstances *c*, but the agent of effort tries, in those very circumstances, to cause this object to become *p*. An effort is an attempt to cause some "object" *O* to adopt a behaviour *p*, while it is by default determined to adopt some contrary behaviour *not-p*. When the effort is "on oneself", the "object" is "oneself". For instance, the object is what one does, what one thinks, what one says. One is determined

to not say something because of a shy temperament, but one makes an effort to speak anyhow. Conversely, one is determined to speak strongly in virtue of being a spirited person, but one makes an effort to stay quiet. When the effort is "on the world", the object is not oneself but what an external object does, or what someone else does, thinks, or says. For instance, the weightlifter tries to cause a heavy object to become lifted, while this heavy object is by default determined to remain on the ground. One makes an effort to convince a friend to go to a party, when the friend does not want to go to the party.

What we call a resistance is the manifestation of the power that determines the default and contrary behaviour of the object in relation to the agent's intention. An effort on the physical world can be, for instance, an attempt to lift a heavy weight that gravity pushes downward: gravity determines the object to stay on the ground, but the agent intends to lift it. An effort on someone else can be the attempt to convince someone to do something she doesn't want to do, whether it is through argumentation, seduction, or pressure. The other agent refuses to believe that *p* or to act a certain way, and the striving agent tries to cause her to believe that *p* or to act a certain way.

11.1.3. The Atoms of Effort

To give a comprehensive description of efforts, we must introduce five basic elements: the object of effort (the portion of reality it is about); the default behaviour of the object (how this portion of reality is determined to become); the power that determines the default behaviour of the object (the resistive power); the agent's intention regarding the behaviour of the object (which is incompatible with the object's default behaviour); and the agent's effort (her attempt to cause the object to adopt the intended behaviour, even if it contradicts its default behaviour). Once these five elements are introduced, we will be able to formulate the conditional definition of effort, which states the conditions that must be met for the action to count as an effort.

(i) First, there is the *object of effort* –what the effort is about. When it comes to mechanical efforts, efforts of the body, the object is usually an object in the ordinary tri-dimensional sense of the term, such as a heavy weight. But when it comes to efforts of the mind, the object is rather the agent's first-order behaviour. During an effort of will for instance, the object of one's effort is what one does: smoking or not smoking (in cases of addiction); continuing or giving up running (in case of marathon running); acting angrily or remaining clam (in case of tensions in a relationship), etc.

(ii) Second, there is the *default behaviour* of the object in particular circumstances. The default behaviour of a heavy weight is "falling", or "staying on the ground". The default behaviour of an agent who is angry, is to act angrily; the default behavior of the tired marathon runner is to give up; the default behaviour of the addict smoker is to smoke.

(iii) Third, there is the *causal power* that accounts for the default behaviour of the object. In the physical case, the causal power responsible for the default behaviour of the weight is gravity; gravity is the power that explains why the default behaviour of the object is to fall. For the runner, it is arguably the evolved mechanisms of fatigue and pain that explains why the runner is determined to stop running.

(iv) Fourth, there is the *agent's intention*. For instance, the weightlifter intends to lift the heavy weight, in order to train, to win a medal or simply for the sake of it. The intention of the marathon runner is to finish the race. The intention of the addict smoker is to give up smoking. Such intentions can be called rebellious intention because their satisfaction requires that the object adopts a given behaviour which is incompatible with the behaviour it is determined to adopt.[85]

(v) Fifth and finally, there is what the agent does to satisfy her rebellious intention anyway, even if it contradicts the determined behaviour of the object –the effort. An effort aims at producing a causal deviation. Summing up, the five elements of an effort are the following:

The atoms of effort

(i) **Object of effort**: what an effort is about ("O")
(ii) **Default behaviour of the object**: what the object is by default determined to do in given circumstances (becoming "not-p")
(iii) **Determinant**: what determines the default behaviour of the object ("R", a resistive power)
(iv) **Intention**: the agent intends to cause the object to adopt a behaviour that is incompatible with its default behaviour ("p")
(v) ***Effort***: the attempt, by the agent, to cause the object to become *p* in the circumstances where it is determined to become *not-p*.

[85] The agent needs not be aware of the rebellious characteristics of her intention.

In passing, it might be useful to distinguish potential efforts from actual efforts. A potential effort refers to the effort an agent *would* have to make, if she was to satisfy a given rebellious intention. For instance, if the smoker wanted to quit smoking, she would have to make an effort to satisfy this intention. A potential effort just requires forming an intention whose satisfaction would require overcoming a resistance. An actual effort requires the attempt to satisfy a rebellious intention.

Potential effort: an agent considers a potential effort if she *wants* to cause some object *O* to become *p* in circumstances *c* where *O* is determined to become *not-p*.

Actual effort: an agent makes an actual effort if she tries to cause some object *O* to become *p* in circumstances *c* where *O* is determined to become *not-p*.

11.1.4. The Conditional Definition of Effort

We can now introduce the three conditions that must be met for an agent to make an effort; for her actions to counts as efforts. First, there must be some power that determines some object to adopt a default behaviour. Formally, a power *R* must determine an object *O* to become *not-p* in circumstances *c*. The "becoming\behaviour of the object" refers to the changes undergone by the object on a certain occasion (becoming *p* or *not-p* in *c*). Second, an agent must have an intention that bears on this very object and whose satisfaction is at some level incompatible with the object's determined behaviour. The agent has an intention whose satisfaction requires among other things that the world becomes *p* in circumstances *c*, while it is determined by some power to become *not-p* by default in those circumstances. Third, there must be an attempt by the agent to cause the world to become *p* in the very circumstances in which it is determined to become *not-p*. This attempt is an effort: making an effort is trying to cause the world to become *p* in those circumstances where it is determined to become *not-p*.

For instance, the runner has an intention to finish a specific marathon, an intention which she acts upon. Now at some point, during the race, fatigue motivates her to stop running. But if she stops running, she won't be able to finish the race in due time. In other words, fatigue determines her to stop running, but stopping to run is incompatible with the satisfaction of her intention. So, she chooses and manages (or fails) to make a successful effort. Fatigue (a resistive power) determined her to become *not-p* (to stop running); but she made an effort to become *p* anyway (to continue to run). In that way, she could continue and satisfy her initial intention (finishing the race). Summing up, the action of an agent on a certain object is an effort if these three conditions are met. (i) First, there is some default

determinant of an object's behaviour in specific circumstances. This default determinant is deemed a "resistive power" in virtue of clashing with the agent's intention regarding the object's behaviour in these circumstances. (ii) Second, there is the intention of the agent regarding the behaviour of that object, which is deemed a "rebellious intention" in virtue of clashing with the resistive power, viz, with the result it is determined to cause. (iii) Third, there is the attempt by the agent to enforce her intention over the resistive power. The first proper claim of the agonistic account is, thus, the following conditional definition:

(1) Conditional definition: an agent makes an effort iff:

(i) *Resistance*: some power *R* determines an object *O* to become *not-p* in circumstances *c*.
(ii) *Intention*: the agent intends that the object *O* becomes *p* in the circumstances *c*.
(iii) *Effort*: the agent tries to cause *O* to become *p* in circumstances *c*.

11.1.5. The Definition of Effort

Any effort presupposes an asymmetric alternative between the default course of action of a thing and the agent's intended course of action for that thing. The effort is the agent's attempt at removing the obstacle that prevents her from causing the object to adopt the behaviour she intends it to have. The resistance is just something that blocks her from following an intended course of action; her effort is her attempt at removing the cause of this blockade. In more rigorous terms, "trying to overcome" means that the agent tries to become the efficacious determinant of the behaviour of the object, whose behaviour is by default determined in some contrary manner by the resistive power.

Making an effort is thus trying to prevent some causal power from manifesting itself in a certain way (namely in causing an object to adopt a behaviour that is incompatible with the satisfaction of one's intention) by substituting the default-determinant of the object's behaviour with another determinant (a power of the agent). An agent makes an effort of self-control if, for instance, she tries to substitute the default determinant of her behaviour (a tempting desire) with her own power qua agent (her reason, will or self-control). When the object of her effort is a physical body, she tries to substitute the initial determinant of the behavior of the object (gravity, inertia…) with her own muscular power.

It is worth noting that "overcoming" has both a result-meaning and a process-meaning. As a process, it refers to the performance of efforts. As a result, it refers to the result of successful efforts. Making an effort is engaging in a process that is the process of *trying to overcome* a resistance. If an effort succeeds,

it produces a result which is *the overcoming* of the resistance. The function (telos, goal) of effort is ultimately to enforce a desired determinant of an object's behaviour in place of a default undesired determinant. That is, it is trying to replace a resistive power, as the default determinant of an object's behaviour, by the effort (that is, by the power the agent exercises during her effort). Indeed, I shall argue that efforts have agonistic goals. Their formal end, the goal that any effort has, is the overcoming of a resistance. An effort is meant to fight a resistive power; no effort is made if there is no resistive power to fight.

(2) Overcoming: the goal of an effort is a result that is the overcoming of a resistance. Overcoming a resistance is, for an agent, to replace a resistive power with the power she exercises during her effort as the (total, partial or relevant) determinant of the behaviour of a given object on a certain occasion. Making an effort, as a process, is *trying* to overcome the resistance.

(3) The agonistic definition: an effort is an attempt to overcome a resistance.

It is also worth noting that we can use "resistance" to describe efforts in ordinary language: we say that someone resists to temptation (makes an effort to overcome a temptation); and, in French, we even speak of the resistance to effort ("la resistance à l'effort"). I will restrict myself to the expression that an effort is an attempt to overcome a resistance, for two reasons. First, switching between effort and resistance would be confusing. Second and more importantly, describing efforts as resistances may carry the idea that efforts are negative, that they merely aim at preventing something from happening. However, this is not the case. An effort does not merely aim at preventing some result from happening; it aims at substituting a causal determinant (the resistive power) with another causal determinant (the power that the agent exercises during her effort).

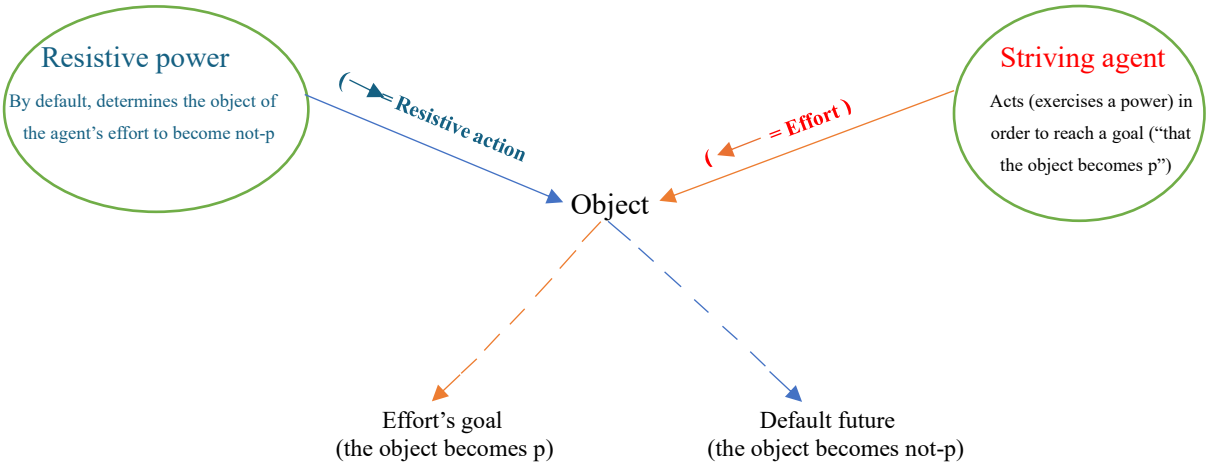
11.2. Resistance

An effort is an attempt to overcome some resistance. At that point, it will be useful to say a few more words about resistance to dismiss some confusions. I shall emphasis five characteristics. First, resistance is both essential and extrinsic to effort: there is no effort without resistance, but effort and resistance are distinct. Second, we should distinguish the resistive power from its manifestation: the resistive power is the cause of the resistance to my effort; the resistance is the manifestation of said resistive power, its resistive "action". Third, resistance and effort are asymmetric because the resistive power is the default causal determinant of the object of effort. An effort can only be attempted on some object if some power has already determined the default behaviour of that object. Fourth, the relation between the resistance and the effort is characterized by two properties: contiguity (the resistive power and the striving agent act on the same portion of reality, and they manifest commensurable powers) and contrariety (their respective independent effects are incompatible). Fifth and finally, a resistance is always relative to an agent's goal.

11.2.1. Resistance is Essential and Extrinsic to Effort

Let's illustrate. For instance, let's say that St Augustin wants to behave according to what he believes are the laws of God. Consequently, he doesn't want to give in to sensual pleasures anymore. However, he is still tempted to give in to those pleasure on certain occasions. In such circumstances, the object of his effort will be his first-order behaviour, what he does, how he behaves. By default, he engages in carnal activities, because of some carnal desires. The resistive power will be something like the desiring part of his soul (from an internalist perspective) or the devil (say, for an externalist illustrative perspective). His effort will be his attempt not to engage in those activities, to not behave in that way.

Assuming there are such things as intellectual powers, let's now imagine Socrates making an intellectual effort to convince Protagoras. From the point of view of Socrates, the object of his effort is Protagoras' beliefs. By default, Protagoras will continue to believe in certain sophistic and relativistic beliefs. But Socrates makes an argumentative effort on him, so that he believes the contrary. Perhaps more trivially, imagine Rocky in the fourth opus of the series, where he fights with the Russian machine called Drago. By default, he will be smashed. But he'll make a heroic effort to smash Drago instead. Using these three examples, we can give a schematic representation of efforts. The resistive power and its resistive action are drawn on the left because it is the default determinant of the object's behaviour (and because we read from the left to the right).



Effort: a goal-directed action performed by the striving agent (for its own sake, or for instrumental reasons); that is, the attempt by an agent to reach a goal.
For instance, St Augustin's attempt to overcome his bodily passions; Rocky's attempt to overcome his Russian opponent, Drago; Socrates' attempt to overcome Gorgias' arguments.

Resistance: the manifestation of a resistive agent\power, that is, a resistive action.
For instance, the temptation of St Augustin (the tempting action of the desiring part of his soul); the boxing of Drago; Gorgias' argumentation.

Result of the resistive action, by default and if the effort fails.
St Augustin succumbs to Passion; Rocky is smashed by Drago; Gorgias remains a sophist and still thinks his initial beliefs are true.

Goal of the effort (result of the effort if it succeeds).
St Augustin acts according to reason; Rocky beats Drago; Gorgias admits he was wrong.

Object: the region of reality that is the object of both the effort and the resistance,
the portion of reality through which the striving agent competes with the resistive agent.
For instance, the struggle between passion and reason inside Augustin's mind; the boxing contest between Rocky and Drago; the debate between Gorgias and Socrates.

This schema enables to make two distinctions. First and as aforementioned, we must distinguish effort (the action of the striving agent) from the resistive relation between the effort and the resistance. We should not conflate effort, which is the attempt to overcome a resistive action; from the relation between the effort and the resistive action. Let's say that the agent who makes an effort of will tries to overcome a tempting desire. The temptation is essential to her effort, for she wouldn't make an effort if there was no temptation. But her effort is of course not her temptation. She wouldn't make an effort if some desire was not tempting her; but she is not both tempting herself and overcoming that temptation.

If efforts were relations, an effort would be two actions performed by the same agent, which is implausible. Even more implausible, an effort would be the performance of two incompatible actions, at the same time and with respect to the same object. But it is implausible that one agent is capable of a such contradictory agency. Rather, an effort implies, entails, requires a resistive action; but the resistive action remains nevertheless extrinsic to effort, although essential. The relation between an effort and a resistance is a resistive relation. At least one of the two relata, namely the effort, must be teleological. For instance, two tectonic plates do not make efforts and don't resist each-others, for they don't try to reach any goal. There is no incompatibility between their respective actions, for they don't aim at producing any effect.

Effort: the attempt by an agent to overcome a resistance.

Resistive relation: the relation between an agent's effort and the resistance of some resistive power (an "agon", a "struggle").

11.2.2. Resistive Powers and their Manifestations

Second, we must distinguish the resistive power (or agent) from its manifestation. Just like we should distinguish the striving agent (*who* makes the effort) from her effort; likewise, we should distinguish the resistive agent (what resists to the striving agent) from its resistive "action" (what the resistive agent does). Imagine that Rambo and Rocky are doing an arm-wrestling contest and that you are Rocky. You are the agent of your effort, and your effort is your attempt to beat Rambo. The resistance refers both to the resistive agent (Rambo) and his resistive action (his exercising force while you are arm-wrestling).

Crucially, a resistance does not need to be opposed by an intentional agent. For instance, Rocky would still make an effort if he was struggling against a machine designed for the training of arm wrestlers. Resistive powers may not be clearly identifiable neither. For instance, imagine a rock climber making an effort to overcome gravitational resistance. It is not entirely clear how we should identify the resistive power. We may say, for instance, that it is the earth, on the basis that it is its action of the earth on the four-dimensional space-time structure that causes the rock-climber to be attracted downward, that is, towards the centre of the earth.

Proximal relata of a resistive relation: an effort and a resistance.

Distal relata of a resistive relation: the determinant of the effort (the striving agent) and the determinant of the resistance (the resistive agent\power).

11.2.3. Resistive Powers as Default Determinants

Power. The resistance to one's effort is, first of all, the manifestation of a power; the action of a particular resistive "agent". When gravity resists the climber's effort, there is something that manifests itself by pushing the alpinist downward. When temptation resists the runner's effort, there is something that manifests itself by motivating the runner to give up. These things that manifest themselves are resistive powers, or resistive agents. Now, it is a tremendous metaphysical and scientific task to identify what powers there are. Resistance-based views will disagree with one another on that question. We may be resisted by the power of our own emotions (we would make efforts to remain calm, that is, to overcome the resistance of anger or rage). We may be resisted by the powers of some body parts (for instance, when we learn a new sport or manual craft, or when Parkison disease hits). We may be resisted by natural powers and elements, like gravitation. Identifying what powers resist is the task of a substantial resistance-based view. For now, I am only trying to advance a formal definition. All the examples I use are therefore illustrative, but not committal.

Default determinant. The important point is that there is an asymmetry between the resistive power and the striving agent. It is because the resistive power has already determined the default behaviour of the object of one's intended effort. For instance, think of the smoker who wants to quit. Her habit and addiction have already determined what she will do in certain circumstances, when she craves cigarettes. The addiction is the default determinant of her behaviour in such circumstances. The addiction is going to cause her to smoke if she does nothing against it. It thus determines her default behaviour in the relevant circumstances. When an agent makes an effort and is aware of it, the resistance always appears as a process that has already started. It is as if the resistance has already started because it has already produced a certain result, which is that it has already determined the next default state of the object. The resistive agent has determined the next default state of an object *O* (to move from *p* to *not-p* for instance); and it is going to cause *O* to become *not-p*.

Resistance as a default determinant: a resistive power has already determined the default behaviour of the object of the agent's effort: it has caused a change which is that the object *O* is determined to become *not-p* in circumstances *c*, while the agent intends (potential effort) and tries (actual effort) to cause O to become *p* in circumstances *c.*

11.2.4. The Two Characteristics of Resistive Relations

An effort is necessarily related to a resistance but remains distinct from the resistance. The proximal relata are two manifestations of power (the effort and the resistance); the distal relata are two powers or agents (the striving agent and the resistive power). Let's now characterize the relation. It has two fundamental properties: it is a *direct relation*, and it is a *relation of contrariety*. In other words, the relation between an effort and a resistance is characterized by properties of "contiguity" and "contrariness".

First, effort and resistance are related in a direct way, contiguously, in the sense that they pertain to the same object, at the same time, and are manifestations of commensurable powers. They have the same object, which is the behaviour of a given portion of reality, be it the physical world, the mental world, the social world, the economic world, the world of ideas… An effort and a resistance must be commensurable in the sense that they must manifest commensurable powers, they must be the manifestations of the same type of powers, such as two physical powers (the physical powers of Rambo and Rocky participating in an arm-wrestling contest) or two mental powers (like during the debate between Socrates and Gorgias).

Contiguity: an effort and a resistance are directly related in the sense that they are manifestations of contiguous powers (they pertain to the same object), contemporary powers (they are manifested at the same time) and commensurable powers (they can enter into causal relations).

Now, many powers manifest themselves contiguously. Two agents making love, two cooks dressing the same table, two rowers propelling the same boat, act on the same object, at the same time, and manifest commensurable powers. But they act in a compatible way, or even in a collaborative way. Resistive powers and striving agents, on the other hand, are contrary powers. They are contrary, in the sense that the respective independent effects of their manifestations are mutually exclusive. The result

that the resistive power will by default produce, stands in a relation of contrariety with the goal of the effort.

> Contrariness. A resistance is the manifestation of a default and contrary power. The resistive power is a *default power* because it has already determined the object to undergo a certain change (to become *not-p*). It is a *contrary power* because it has determined the object to become *not-p* while the striving agent intends and tries to cause the object to become *p* in the relevant circumstances.

How can the striving agent and the resistive power be directly related while being at the same time in a relation of contrariety? Their *manifestations* are compatible, in the sense that it is possible for them to manifest themselves at the same time and with respect the same object. But their *results* are incompatible, in the sense that they can't occur at the same time and with respect to the same object. The result of an effort is its goal; it is what the agent tries to do through her effort. The result of a resistive action is the state of affairs it is by default going to produce.

> The resistive power, its manifestation, the result of its manifestation: A resistive power *manifests* itself by actually determining the default behaviour of the object of an intended effort (its manifestation is the determination of the default behaviour of the object). A resistance produces its *result* if it does cause the object to adopt its default behaviour.

For instance, let's say that a tempting desire is a resistive power. It manifests itself in causing a change, which is that the agent is motivated to engage in a tempting behaviour. The production of this change is intrinsic to the manifestation of a tempting desire. If a desire is not tempting the agent, then it is not a temptation, for it is not tempting. Likewise, if gravity is not attracting a body downward, then there is no manifestation of the gravitational power. But their results, for instance that the agent succumbs to the temptation or that the rock climber falls, are extrinsic to these resistances. There can be a temptation without there being a succumbing to the temptation. It is essential to the tempting power of a given desire that it tempts the person, it is not essential to it that it causes the person to succumb to the temptation. An occurrent resistance necessarily causes some changes, otherwise it wouldn't be the manifestation of a power –a temptation tempts, gravity attracts. But it does not necessarily cause its result –a temptation does not necessarily cause a succumbing to the temptation; gravity does not necessarily cause a fall. In sum, resistance and effort can be both directly related and

contrary because the contrariness obtains between their respective independent effects, while the contiguity obtains between their manifestations.

11.2.5. The Relativity of Resistance

Finally, it is worth emphasizing that the resistivity of powers and their manifestations is a relative property. Indeed, a power can only be resistive to the goal of some agent. There is no resistance for non-teleological agents. Two particles going in opposite direction in the CERN collider do no resist each-others, although they stop their momenta and destroy their respective internal coherence. But neither do they resist, nor do they strive, because they do not have any goal or evaluation whatsoever. They do not aim at maintaining their speed; they do not aim at persisting in their initial form. There is no contradiction thereof between their respective actions.

The relativity of resistance appears clearly in the fact that an action can be resistive to one agent and not to another. Gravity resists alpinists, not skydivers. Likewise, think of the action of an immediate desire, which is determined to cause the agent to satisfy this desire. The motivating force of immediate desires constitute a resistance to the agent who tries to follow an ascetic way of life. But it does not constitute a resistance for the hedonist or for Don Juan. Resistivity is not an autonomous property, for no power is resistive on its own. An isolated action cannot be resisted, nor can it resist anything.

(4) Resistance: a resistance to an effort is (i) a power (ii) manifesting itself by determining the default behaviour of the object of an agent's effort, (iii) in a contiguous way (the effort and the resistance pertain to the same object, at the same time, and are manifestations of commensurable powers) and (iv) in a contrary way (the respective independent results of the resistance and the effort are mutually exclusive).

11.3. The End, Object and Awareness of Effort

An effort is an attempt to overcome a resistance. We have now clarified the formal meaning of resistance: it is a power, manifesting itself by determining the default behaviour of the object of my effort, in a way that is incompatible with the goal of my effort. This last section aims at clarifying important aspects of the agonistic definition. (11.3.1.) The first and more urgent clarification concerns the specific end (goal, telos, function…) of effort. The agonistic proposal is that efforts aim, and only aim, at overcoming resistances. We make efforts for many reasons, but their goal is always to overcome a resistance. Consequently, efforts are authentic and specific actions: they are the actions through which we try to modify the balance of powers around us. (11.3.2.) The second clarification precisely concerns the meaning of overcoming. Efforts aim at overcoming resistances, that is, at substituting the resistive power with the power that the striving agent exercises during her effort. (11.3.3.) The third clarification is a distinction between instrumental efforts and efforts for their own sake. The three last clarifications respectively concern the object, awareness and dynamics of effort (from 11.3.4. to 11.3.6.).

11.3.1. First Clarification: The End of Effort

This clarification touches on the problem of the ultimate ontological nature of efforts. To recall, there is a distinction between the view that efforts are properties of action (effort as effortfulness) and the view that efforts are actions in their own right (effort as effort). I gave an argument in favour of the view that efforts of will are actions of their own right: an effort of will is, indeed, the exercise of a specific power (self-control) that has a particular end, which is to prevent a contrary desire to produce the result that it is determined to produce, by default. For instance, the marathon runner makes an effort of will in order to persist in the first-order action of running; she is deploying some self-mastery capacity, and this deployment aims at preventing the contrary desire to produce its result (causing her to consent, to decide, to accept… to stop running). With respect to bodily effort, I took the example of the pole-jumper as I distinguished the bodily effort she makes when she runs and jumps, from the absence of bodily effort when she lets herself fall down to the mattress.

In this section, I shall give a second motivation for the claim that efforts, whatever the species, are genuine actions. Namely, it is that we need to have a fine-grained criterion to individuate action –which the agonistic definition offers. The idea is that we should distinguish between actions that *are* efforts and actions that *take* or *require* efforts as their parts, which can be called effortful actions. A goal-directed action takes effort if its successful completion *requires* to overcome a resistance. A goal-directed

action is an effort if its goal *is* to overcome a resistance. An effort has a specific formal goal, which is precisely to overcome a resistance.

(5) Being an effort: an action is an effort if its goal is to overcome a resistance. To successfully make an effort, it is necessary and sufficient to overcome a resistance.

(6) Taking an effort: an action takes an effort (is an *effortful* action) if its goal requires, but is not, to overcome a resistance. To succeed in an action that takes effort, it is necessary but not sufficient to overcome a resistance. An action takes effort if it has an effort as a proper part.

To illustrate the effort-effortful distinction, let's say that Paul goes on for a bike ride. His intention is to complete a ride that includes one climb and one descent. To complete the climb, he must overcome earth's gravity, but he doesn't need to for the descent. The gravitational force amounts to a resistance because, by default, it has determined Paul to remain at the bottom of the climb (in contrast, for instance, to the action of a storm pushing him to the top). Let's call the global action "the ride". It has two main obvious parts, which are "the climb" and "the descent". The whole process of riding his bike up and down the mountain is not a bodily effort, but it *takes* an effort: namely, the effort to climb the pass. The climbing part is an effort; the downhill part is not. The whole ride requires, takes an effort. The action of riding to the top of the pass is an effort; doing the whole ride is an action that requires to make the effort to climb the pass. This is for the illustration of the distinction between being and requiring an effort. Following Massin's proposal, we can also frame the distinction in terms of a distinction between efforts and effortful actions (Massin, 2022a).

The fact that efforts are very specific, agonistic, "combative" actions suggests a power-based ontological approach, according to what we really do, when we act, is to modify the actual and dispositional organisations of powers in our environment. Indeed, the agonistic account entails that the goal of an effort is, and only is, to overcome a resistance. Let's focus specifically on the climbing part of Paul's ride, on "the climb". One may wonder: what does really Paul do during the climb? What is the fundamental description of what he is doing? On the one hand, we can say that what Paul really does is a successful attempt to reach the top of the mountain. In more ordinary terms, we can say that he successfully rode to the top. This is, we could say, a spatial-oriented description. But one could also rather go for a power-based ontological description. In those terms, what Paul really does, during the climbing part, is overcoming gravity. The modification of his spatial position and his "reaching the top" is merely the result of the modification that he produced with respect to the balance of forces that apply to his body. "Reaching the top" is an ontologically less fundamental description of what he really did

than “successfully overcoming gravity”. True, he reached the top, but what he really did was overcoming gravity. Now, Paul may not have had any representation of the fact that what he really did was overcoming gravity. He doesn’t have to consciously, intentionally… intend to overcome gravity. But he nevertheless has to make a bodily effort to complete his ride and reach his goal.[86]

Defining efforts as actions aiming at overcoming resistive actions has one main benefit. Namely, it gives us the possibility to precisely identify and individuate efforts. One may however worry that it leads to an inflation of actions. But I think that it is not the case if we accept the power-based ontology that the agonistic account of effort suggests. When Paul climbs to the top of the mountain, he mainly overcomes gravity, which results in his reaching the top of the mountain. We can make efforts for their own sake (perhaps); we usually make them instrumentally, for the sake of some other goal (their teleology or intentionality is often derived and implicit). But the intrinsic and proper goal of an effort is always the same. Any effort aims at overcoming a resistance, that is, the manifestation of a resistive power. The formal goal of an effort is an agonistic goal; a state of affairs that can be metaphorically described as a victory. In metaphorical terms indeed, the performance of an effort is akin to fight; while the goal of an effort is akin to a victory.[87]

11.3.2. Second Clarification: What it Means to Overcome

An effort is not simply an inhibitory process, and this is the reason why efforts must be described as attempts to *overcome* resistive powers. The function (telos, goal) of an effort is to enforce a desired determinant of an object’s behaviour in place of a default undesired and contrary determinant. That is,

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[86] As explained during the third chapter on agency, it is sufficient that an action be inserted into a general intentional sequence for this action to be teleological, in some derivative way. Consequently, Paul’s effort to overcome gravitational resistance is teleological. Resistance is always relative to an agent’s goal. But “goal” should not be reduced to clear, conscious and intentional goals. There are also derivative, indirect, unconscious, motor… goals. But the agent’s effort must necessarily be goal-directed under some description.

[87] Two remarks are in order. First, we can distinguish two different expressions of the form “make an effort to x” because x can refer either to the goal of the effort or to the goal of an effortful action. It refers to the goal of effort if x specifies the nature of the resistive action that must be overcome (“I make an effort to overcome my repugnance to talk to her, I am determined not to talk to her, but I make an effort to talk to her anyway”). But it can also refer to a further goal (“I make an effort to talk to her to convince her to accept the deal”; “I make an effort to lose weight”, that is, “I make an effort not to eat, to overcome the desire to eat, in order to reach a further goal, which is losing weight”).

Second, when we talk about our efforts in ordinary language, we are not so much bothered by the distinction between efforts and effortful actions. We probably often use “effort” to refer to “effortful actions”. This tendency is not necessarily a sign of bad faith. An agent referring to an effort (which is actually an effortful action) may simply pinpoints towards the fact that “this action took an effort” and that it is not entirely clear exactly what part of it was an effort.

it is trying to replace a resistive power, as the default determinant of an object's behaviour, by the power manifested during the effort. By default, gravity governs the movement of our bodies. By default, habits determine the movements we perform. By default, spontaneous tempting desires determine what we do.

Efforts aim at inhibiting and *surpassing* such default determinants. Making an effort does not only consist in trying to prevent, inhibit, block, refrain… a resistive action from determining the behaviour of a given object. Making an effort is necessarily also at the same time an attempt to enforce another determinant. Making an effort is both trying to prevent a certain change from being caused and causing a contrary change instead; it is trying to prevent the resistance from causing a change and trying to cause a contrary change instead. Overcoming a resistive action thus means substituting the effort for the resistance as the (exclusive, major or critical) determinant of the behaviour of the object of the struggle.

For instance, it is for Paul to try to reach the top of the climb on his bike (under a certain time) by preventing gravity to make him stop (or ride too slowly). For the tempted smoker who has a resolution to quit, it is trying to replace the desire to smoke by her effort of self-control as the determinant of her behaviour on this particular occasion. The agent of effort aims at replacing itself as the determinant of the object's behaviour. The effort-making agent competes for "ontological dominance" over the portion of reality that is the object of the competition. Making an effort is trying to overcome a resistance, that is, *at the same time*, trying to cause some desired change *and* trying to prevent the resistance from causing some undesired change.[88]

Actions that are efforts, necessarily and contingently. The nature of the formal goal of efforts entails that some actions are, in virtue of the nature of their goal, usually, if not necessarily, efforts. This is the case of military battles, sport competitions or self-control exercises. One cannot genuinely engage in a battle of any kind if one's goal is not to win. The goal of a battle is to win, that is, to defeat the enemy. The goal of a sport competition is also to win and be stronger than some opponents. But winning a match, a competition, a game or a battle is arguably identifiable with the overcoming of the resistive actions of (boxing, military…) opponents. Likewise, self-control exercises are probably identifiable with efforts in virtue of having the same type of agonistic, battling goal.

The agonistic account entails that it is probably necessary that such actions are efforts, in virtue of their goals. But some actions may be efforts merely in virtue of some empirical conditions only, and not by conceptual necessity. For instance, one may face substantial resistance while trying to understand a

[88] An effort is not a mere inhibitory process not by choice, but by necessity. We cannot merely inhibit a certain causal process, for inhibiting a causal process is substituting another causal process instead. Stopping a certain causal series implies to open another causal series, which is substituted to the first one, which replaces the first one.

difficult text such as Kant's first Critic. Understanding the first critic is an effort if one aims at understanding it and if one understands the text just in case one overcomes the text's resistance.[89] But if the attempt to understand Kant's Critic happens to be an effort for most of us in this world, it doesn't seem a necessary truth. We can conceive or imagine an infinite spirit for which it isn't an effort; a spirit for which the text (its content or meaning) doesn't resist, whatever it means for a text to resist.

11.3.3. Third Clarification: Instrumental Efforts and Efforts For Their Own Sake

Efforts for their own sake. We can distinguish efforts that are made for their own sake, from efforts that are made for the sake of something else. Usually, agents make efforts in order to do something else. In axiological terms, the overcoming of resistive actions has instrumental value. In conative terms, we instrumentally desire to overcome resistive actions (because those actions are incompatible with some other goals that we intrinsically desire to reach). For instance, we don't try to overcome the resistance of the gravitational force just for the sake of it, but in order to catch our bus, win a bike race or reach the summit of a mountain. We don't try to overcome the resistance of a tempting desire just for the sake of it, but because acting according to the tempting desire is incompatible with some line of conduct that we intrinsically want to enforce.

Can we make efforts for the sake of it? That is, can we aim at overcoming a resistance just for the sake of it, just because we want to engage in a competitive relation with the world, ourselves or other agents? It might be that we can. Efforts may be subject to a paradoxical inversion that is familiar in the context of games. According to the theory of Suits, we (sometimes, perhaps always) pursue the goal of winning a game just because it makes playing the game possible (Suits, 1978). We don't really want to win the game; what we really want is to play the game. We intrinsically desire to play the game, and only instrumentally desire to win it. But in order to really play the game, we need to pretend to some degree that we really want to win it. Otherwise, we wouldn't be playing the game. The means-action (playing the game in order to win) is the real end we pursue. The goal of the action (winning) becomes a means for doing what we really want.

According to Suits' theory, playing games thus often implies to reverse the relation between means and ends. More precisely, there is an inversion between two means-end relations: a causal relation, and

[89] Of course, we would need to know what it means for a text or a theory to resist the person or mind trying to understand it, if we were to extend this example.

an axiological relation. The causal relation remains the intuitive one: the means-action (playing the game) is the means to the end (winning the game). But the axiological relation is reversed. What is usually instrumentally valuable (the means-end action, playing the game) becomes the axiological goal (what we really want and value). We do aim at winning the game, but we only adopt this goal in order to achieve our genuine end, which is playing the game.[90]

The same paradoxical inversion could apply to efforts. It would be possible to decide to try to overcome a resistive power, just because it makes it possible to actually try to overcome it. We can try to overcome a resistive power just because we want to be in the process of overcoming it. We aim at a certain goal which is the overcoming of a resistance (as a result; such as defeating a boxing opponent or a temptation) because it makes it possible to engage in the overcoming process. The result becomes the means to the process. We aim at successfully overcoming a resistance because what we really want is to engage in the process of fighting the resistance. For instance, an alpinist may try to reach the summit (that is, to successfully overcome gravitational resistance) because she likes the process of climbing (that is, of being in the process of overcoming gravity). An ascetic could be making efforts to overcome natural and necessary desires because she intrinsically value that kind of struggle, not because she wants to please God. Perhaps philosophers aim at overcoming the resistance of difficult concepts just because they want to be battling with conceptual resistance.

We would of course need some explanation of why we intrinsically value the attempt to overcome a resistive action. In the Nietzschean perspective for instance, it is finally good to fight a resistance because it is the only way to experience and know our own powers. Feeling one's own powers is believed to be a final good (Dixsaut, 2006, pp. 33-34). It thus seems possible to aim at the goal of an effort just because it makes it possible to make an effort. In fact, we may differ in our personalities based on what resistances we like to fight. Nietzsche also puts emphasis on the fact that individuals, including philosophers, differ regarding the resistance they try to overcome. To philosophers, he for instance asks: why competing with Heraclites, Bacon or Descartes in particular? Why a philosopher, rather than a poet? (Dixsaut, 2006, p. 63).

We perhaps make efforts for their own sake when we instrumentally value the goal of the effort, and intrinsically value the effort. One may however try to nuance or reject the claim that we can make efforts for their own sake. One could argue that the axiological inversion is not genuine; that, in fact, we do not intrinsically value the struggle with the resistive action. For instance, one could say that the ascetic

[90] The paradox lies in the fact that the axiological goal temporally precedes the means. Our intrinsic goal is the game-activity, but in order to perform that activity, we instrumentally set a goal that is winning the game.

person only values the struggle because she ultimately believes that it is the means to an effortless after life.

11.3.4. Fourth Clarification: The Object of Effort

Efforts are about portions of reality which are determined to undergo changes that are incompatible with the satisfaction of an agent's goal. Resistance-based views will differ from one another based, among others, on how they conceive the substantial nature of the object of effort. The agonistic definition remains uncommitted regarding the substantial nature of those parts of reality that can be objects of efforts and resistive relations. But let me give some possible candidates for illustrative purposes. Among those examples, I shall mention the respective objects of the two species of effort to which I am committed, namely, bodily effort (which is about the kinetic behaviour of a body) and conative effort (which is about the first-order behaviour of the agent).

I) The Kinetic Behaviour of Physical Bodies

One obvious possible object of effort is the *kinematical behaviour* of a physical object, in the ordinary sense of "object" (one's body, a chair, a weight load). For instance, think about a pole-vaulter whose goal is to pass a 6m bar. By default, gravity is going to cause his body to remain on the ground, or to not jump that high. He thus needs to make an effort to pass the bar, he needs to overcome gravity. The object of the resistive relation between gravity and the pole-vaulter is the kinematic behaviour of the pole-vaulter's body on the occasion of his attempt to pass the 6m bar. Now, the "object" needs not be an object in the ordinary sense of the term. In a boxing match, the object of the struggle between the two boxers' efforts would be the unfolding of the match: who punches who, how much, in what frequency, who avoids the hits better, who knocks the other out and who convinces the judges to vote for her. If Rambo and Rocky take part to an arm-wrestling context, the object of their struggle is the respective evolution of the positions of their right arms.

II) First-Order Actions

I argued that an action, or first-order *behaviour,* is the object of efforts of will. Indeed, during an effort of self-control, the agent tries to overcome the temptation to engage in a specific tempting behaviour. For instance, imagine that the agent has made a resolution not to smoke but that she is now

tempted to smoke. By default, she is determined to make the decision to smoke, her desire to smoke will govern her behaviour. But she makes an effort, she tries to perform another action, at least to not perform the action of smoking, she tries to persist in her resolution. The object of her effort is her first-order action, that we can also conceive as the decision-making process responsible for the action she does perform.

III) Desires and Emotions

Desires and their manifestations may also be the object of efforts. For instance, long-term efforts can be seen as attempts to overcome certain desires (not only their manifestations, like in efforts of self-control, but also their existence). This is perhaps the kind of effort Descartes has in mind when he mentions his effort "to endeavour always to master myself rather than fortune, to try to change my desires rather than to change the order of the world" (Descartes, 1994, III). Such efforts aim at making some desire inoperant; although the desire resists to its annihilation, cancellation or replacement.

Attitudes and *sentiments* may also be objects of agon. When Don Juan makes an effort of seduction, the object of his effort is the sentiment of a women towards him. By default, her sentiment is governed by the principles of the church and mistrust towards sexual intercourses. Don Juan makes an effort on her, to seduce her, in virtue of the fact that he tries to overcome her mistrust. He tries to determine her sentiment by his words, instead of her sentiment being determined by the principle she inherited. The object of such an effort would be the sentiment of the women; the striving agent would be Don Juan's persuasion and the resistive agent would be the rigorist Christian's education of the women.

IV) Beliefs and Definitions

Definitions (or beliefs about definitions) may also be the object of agons. For instance, two philosophers can make efforts to convince each other's that a certain definition is adequate, by means of certain arguments. Say, the object of their efforts is the definition of S. One philosopher believes that S is *p*, the other that S is *not-p* (for instance, *q*). Both compete through means of argumentative actions. The first philosopher tries to overcome the resistance of the other, that is, her logical argumentation, and vice versa. *Beliefs* may as well be objects of agon. When Biden or Trump (or their respective party) try to win the US presidential election, they make efforts to convince or persuade the American citizens to vote for them. More precisely, they could be said to make an effort to convince the voters who are inclined to vote for the other candidate. The object of their respective efforts would be the citizens' beliefs regarding what they should do when the election comes.

V) Social Entities

Social artifacts (laws, institutions, monetary investments, …) may also be the objects of efforts. For instance, the law for the abrogation of the death penalty in France was the object of an intense struggle. Each side of the debate tried to be the critical determinants of the evolution of the French legal system regarding the death penalty. The object of their struggle was the evolution of the law, or perhaps the evolution of the beliefs of those making the law.

11.3.5. Fifth Clarification: The Awareness of Effort

We saw earlier that there is clear evidence that we believe that there is a feeling of effort. The agonistic definition is of course compatible with this idea. It suggests that feeling an effort is for an agent to feel that something resists her attempt to cause a change. The content of such a feeling must be minimally twofold: it must at least implicitly represent the fact that the agent acts, exercises a power; and it must represent in some way the fact that some power resists to her action. Resistance-based views may disagree at two levels regarding the feeling of effort. First, we can disagree when it comes to count which efforts are felt. Some may say that all are felt; some may maintain that some efforts only are felt.

Second, we can disagree concerning the role of the feeling of effort in the existence of effort. That is, some may believe that it is possible to make an effort without feeling it; while some may maintain that it is necessary to feel the effort to make it. I argued that we not necessarily feel our bodily efforts. But when we do, the feeling must represent both the exercise of the bodily (the *voluntary* mobilization of the muscles) and the resistance of external forces (the *tension* in the muscles). Conative efforts are essentially felt, and their feeling has a twofold content. On the one hand it represents the motivational power generated by the unpleasantness of what I doing; on the other hand it represents the exercise of self-mastery that prevents me from giving in to the motivation to give up.

I) When Do We Feel Effort?

In fact, there are three possible views of the relation between effort and the experiential awareness of effort. First, one can deny that we ever have such an awareness, a view that is not so plausible. Second, one can maintain that it is possible to have an awareness of one's effort, but that it is not necessary. Third, one can vindicate that it is necessary to have an awareness of one's effort. I will argue that the

relation between effort and its feeling varies depending on the species of effort: physical efforts are not necessarily felt, but mental efforts are. Finally, and as we already saw, we can distinguish:

II) Subjectivism and Objectivism

Subjectivist view of effort: it is essential to an effort that the striving agent believes or feels that she is making an effort.

Objectivist view of effort: it is not essential to an effort that the striving agent believes or feels that she is making an effort.

11.3.6. Last Clarification: The Dynamics of Effort

I) Repressive and Productive Efforts

Finally, it is worth noting that we can distinguish different dynamics of effort based on the different dynamics of action.[91] We make efforts to overcome resistive powers, that is, to prevent them from governing the behaviour of a given region of reality. Now, resistive powers can determine different types of behaviours. Consequently, efforts can aim at causing different types of behaviour. There are different types of behaviours, changes or results that an effort can aim at causing.

First, we can distinguish productive from repressive efforts. An effort is productive if the agent tries to cause a positive change. For instance, the agent can try to overcome her laziness in order to get out of bed; in order to cause an overt change that is a "getting out of bed". An effort is repressive if the agent tries to cause a negative change. For instance, a millennial can make an effort to stop scrolling on her phone; an agent can make an effort to stop a bulimic surge, to quit smoking, to stop playing to Candy crush, etc.

[91] The different basic action types were introduced during the fourth chapter.

II) Persistence and Ignition

Secondly, we can distinguish efforts of persistence from efforts of ignition; igniting and persisting efforts. An effort of ignition aims at bringing about a short-lasting event. Think, for instance, to the effort to get up in the morning when tired, or the effort to stop scrolling one's phone. Igniting efforts aim at overcoming resistive powers that are determined to *maintain* a certain state or process into existence. For instance, the desire to scroll one's phone maintains into existence the "scrolling" process. An effort to get up is an attempt to overcome the desire to *remain* in one's bed.

An effort of persistence, on the other hand, is an effort aiming at causing a certain state, process, event to last, that is, it is an effort to maintain a certain state, process or event into existence. For instance, it is the effort to keep running a marathon despite a temptation to stop, in order to finish the race; or it is the effort to continue to not smoke despite a temptation to smoke.

Dynamics of efforts	Productive efforts	Repressive efforts
Of ignition	The attempt to overcome a resistive power manifesting itself by determining a negative and lasting process to persist in its existence. *Example*. The attempt to overcome the temptation to stay in bed. The attempt to overcome gravity when lifting a weight.	The attempt to overcome a resistive power manifesting itself by determining a positive and lasting process to persist in its existence. *Example*. The attempt to overcome the urge to keep scrolling on TikTok's. The attempt by Superman to overcome the inertia of a moving train when he tries to stop it.
Of persistence	The attempt to overcome a resistive power manifesting itself by determining a certain negative event to occur. *Example*. The attempt to overcome the desire to stop running a marathon. The attempt of a cyclist to maintain her speed while headwind increases.	The attempt to overcome a resistive power manifesting itself by determining a certain positive event to occur. *Example*. The attempt to overcome a temptation to smoke. The attempt to not fall while being pushed around.

12. Two Objections

The agonistic definition faces two sorts of objections. On the one hand, one can refuse to see resistance as the specific difference of efforts. More precisely, one can argue that there can be effort without resistance. On the other hand, one can argue that resistance is not specific to effort. In other words, one can deny that the agonistic definition satisfies the agonistic principle according to which efforts, resisted actions, constitute a specific mode of agency. One can indeed object that any action is resisted in some way. Consequently, the objection goes, we can't distinguish actions from efforts as I do, since both are resisted. (12.1.) I shall reply first to this objection that resistance is not specific to effort. Once I have clarified why resistance is not essential to agency in general, I will move to the objection that resistance is not the specific difference of effort (12.2.).

12.1. Resistance Without Effort

My reply to the objection that resistance is not specific to effort is threefold. First, I maintain that there is a conceptual, metaphysical difference between effort and action. Indeed, an action requires one agent and one object, onto which the agent causes a change. On the other hand, an effort implies two agents acting on the same object, in a contrary way. But secondly, the objector could reply that any action implies a second and resistive power, which is the object of action itself. I maintain that the object of an action merely exists, and existing is not acting, yet alone acting in a contrary way. Finally, I will explain that we should distinguish possible efforts from actual efforts. Since the agonistic definition is a formal definition not putting restrictions on what powers there are, we can potentially identify many more efforts than there actually are. But we don't have to accept that any possible effort according to the agonistic definition is an actual effort.

12.1.1. First Reply: Striving Is More Than Acting

A goal-directed action is the causation of at least one change, to some object, by an agent, in order to reach a goal.[92] In simpler words, acting teleologically is doing something in order to reach a goal. An effort is a specific goal-directed action, where the agent does something specific (she competes with a resistive power) in order to do something specific (she wants to overcome the resistive power, that is, she wants that her effort determines the behaviour of the object instead of the resistive power, which is the default determinant of the object's behaviour).

During any effort, two powers thus contiguously "act" on the same object. They act in a commensurable way on the same portion of reality and at the same time, but the resistive power has determined the object to undergo a change which is incompatible with the goal of the striving agent. The first reason why resistance is not essential to action is that resistance implies a relation between two powers, while an action only implies one agent in relation to some object. My action can be resisted only if the portion of reality upon which I act is also, at the very same time, the object of a distinct (and contrary) action of a distinct power than the one I exercise. If the causative view of action is right, if an

[92] To recall, I only consider goal-directed actions in this chapter. I thus use "action" as short for "teleological, goal-directed action". To be clear, the current objection is the objection that resistance is essential to goal-directed actions and, consequently, that we can distinguish separate efforts from goal-directed actions.

action is the causation, by an agent, of at least one change to an object, then, by definition, an action does not entail a second power.

To illustrate the distinction between simple actions and efforts, consider the following contrastive example. In his Principles, Descartes imagines a possible world where anytime we try to move objects, said objects move by themselves. In this world, objects obey our wills just like, perhaps, the world obeys God's commands: "if every time our hands moved towards any place, all the bodies in that place receded as quickly as our hands approached, we should never feel hardness" (*Principles*, II, iv, quoted in Massin, 2017, who translates "hardness" by "resistance"). But when we try to move objects in the actual world, their weights usually resist our movements. If we try to lift a book upwards and that gravity applies, the downward force exerted by the book will counteract the upward force we exert on it. If we try to move it downward, its acceleration could help us at the beginning, but it will resist us once we want to stop its downward movement.

These two worlds enable to illustrate the conceptual distinction between a mere action, a non-resisted action, an action with one agent; and a resisted action, an action that is an effort. In Descartes' world, moving an object is an action but not an effort because nothing counteracts the arm's movement. Except for the agent, there is no other power acting on the object (the book's kinematic behaviour). But in our world, moving an object upward, and in a context where gravity applies, is an effort because the object's weight, or gravity, resists the movement. The agent who lifts the book is not the only one acting, because gravity is also acting contiguously and in a contrary manner.[93]

[93] One could however object that we make an effort in Descartes' world when we move objects because, in order to move them, we still have to move our limbs, which have weights and which consequently can resist to the movement we want to give them. Even moving one's bare arm could be an effort to the extent that our arms have weight too. In fact, one could indeed argue that the primary locus of physical effort is the resistance that a person's bodyweight poses to her exercise of muscular power. However, this complexion does not threaten the distinction between action and effort.

We can perfectly imagine a world where our limbs obey our will just like, in Descartes' world, objects obey our physical movements. In this "extended Descartes' world", whenever we will to move an arm, it is like the weight of the limb disappears. Consequently, when we move it, its weight does not counter-act the muscular power we normally have to exert to move it. In other words, even if moving an arm usually is an effort in our world, it is not in the extended Descartes' world since the resistance of the arm to its own movement, due to its weight, is abolished.

P1 An action is the causation of at least one change to one object by an agent. Consequently, an action only requires one agent and one object.

P2 An effort is the attempt, by one agent, to overcome the resistance of some resistive power. Consequently, an effort requires two powers (the agent and the resistive power) manifesting themselves in a contiguous and contrary way on the same object.

C. An action necessarily entails a relation between one agent and one object; an effort necessarily entails a resistance, that is, an agonic relation between two powers on the same object. Therefore, an effort is not reducible to an action; and resistance is not essential to action.

12.1.2. Second Reply: The Object of Action Needs not Be a Power

We can distinguish efforts and actions on the basis that efforts require two powers "acting" in a contrary way, while actions only require one agent acting on some portion of reality. The objector could reply that, on closer scrutiny, an action does necessarily entail two powers. When an agent modifies a given portion of reality, when she causes a change to the object of her action, there is necessarily a second power. Namely, there is the object itself. I have assumed that the object of actions, the region of reality modified by the agent during her action, is a purely passive entity, structure or situation, which merely receives the change that is caused to it. But, the objection goes, the object of an action does not passively receive a change. It resists it.

I deny the idea that the object of an action must be a power. First of all, this objection seems to conflate existence and productivity. Conceptually, an object does not produce anything; it merely exists. The object of action would resist the agent only if it was determined to undergo a change that is incompatible with what the agent is trying to do to the object. But by default, I maintain that the object is not determined to undergo any change. By default, an object is determined to persist. It may perhaps resist the attempt by an agent to destroy it. But it will not resist any change that an agent tries to bring about whatsoever.

Secondly, conscious objects can welcome, appreciate changes. A baby that is fed or rocked, a lover who is loved, do not need to act. It is possible for them to just be the objects of someone else's action. We can perfectly conceive that they do not resist in any way what the agent is doing to them. On the one hand, they are not manifesting any active powers whatsoever, they are merely the objects of someone's else action, they are purely passive. On the other hand, they accept, welcome, like, appreciate… the action that a certain agent is performing on them. They do not resist them in any way.

(i) The object of an action merely exists, it does not act. That is, it is an object, not a power. It must have the passive power to be affected, it doesn't need to manifest any active power.

(ii) The object of an action, if conscious and evaluative, can even appreciate the changes that are caused to her. That is, she can willingly undergo changes.

12.1.3. Third Reply: Distinguishing Possible Efforts and Efforts

Still, the objector may reply that the agonistic account does not correctly quantify efforts. An adequate definition of effort should reflect the way we talk about efforts. But, the objector goes, the agonistic definition does not reflect at all the way we talk about efforts. For instance, we don't spontaneously consider that lifting a finger is making an effort. However, it can be an effort according to the agonistic definition. The agonistic definition thus entails a completely counterintuitive, and presumably false quantifications of efforts. In one word, the objection is that the quantification of efforts by the agonistic account is without comparison with the quantification of efforts by the ordinary language. This suggests that the agonistic account is false, that it has not captured the nature of those events that we refer to by the concept "effort"; that it has not captured the meaning of effort.

My reply that we should not conflate possible efforts with actual efforts. The agonistic definition is a formal definition, it identifies the minimal formal structure that is necessary to effort. It is true that we don't call "effort" any action that can be an effort according to the agonistic definition. But there are two reasons behind it. First, the agonistic definition does not commit to identifying what powers there are. Consequently, it is compatible with the claim that Superman makes an effort to block a moving train. Formally, this is an effort. But of course, there is no such agent as superman and his superpowers. Consequently, there is no such efforts. Thus, the agonistic definition does not entail that there are more efforts that there seems to be. It only does in proportion to the number of powers and agents that one welcome in one's ontology. I have already developed a committed account in the third part, on the occasion of which I defended the proposal that there are at least two species of effort. While bodily effort is central to physical agency, conative effort is not essential to agency and arguably captures the ordinary notion of effort.

Conclusion. Summing up, I have replied to the objection that resistance cannot explain the specificity of effort, for any action must be resisted. I have replied, first of all, that it is not conceptually true. An action implies one agent or power; an effort requires two agents or powers acting in a contiguous and contrary way. I have then denied that the object of action must be identified with an agent. The object

of action merely exists, it doesn't need to manifest or to have any active powers; it only needs to manifest the passive power to be affected by an agent's action. What is more, conscious persons, who are dispositionnally capable of acting, can willingly remain passive when they are acted upon. In such cases, no resistive action is performed by the "object" of an agent's action

12.2. Effort Without Resistance

Finally, the main objection to the agonistic definition of effort just is that resistance is not essential to efforts. One can object that resistance is not essential to effort; that it is not part of the essence of effort; that there are efforts without resistance. To defend the agonistic definition, I shift my attention back towards the alternative definitions that I identified earlier. I will then show that these alternatives to the agonistic definition do not fare better. In fact, I will try to show that these alternatives become more plausible if we admit that they are definitions of certain *aspects* of resistance. My general argumentative strategy will be the following. First, I will raise some worry, to the effect that each definition has implausible consequences. Second, I will show that these implausible consequences disappear if we agree to restrict the scope of these definitions to resisted actions. That is, these definitions become more plausible if we only apply them to resisted actions, that is, to efforts according to the agonistic definition. From that, I conclude that the agonistic definition is more plausible than the other ones.

12.2.1. Reply to the Volitional View

(i) The Volitional definition: an effort is a *volition.*

- Making an effort is, for an agent, trying to move her body.

The volitional theory suffers from two issues. It implies that we make some mental effort whenever we move intentionally. However, it is implausible. On many occasions, we precisely make a conative effort not to move, like in the case of hiding near a serious danger. What is more, we wouldn't call conative efforts all the movements we make automatically and habitually, which are however intentional, and which can be defined as efforts consequently according to the volitional view. Second, it puts too much emphasis on bodily efforts while we also make efforts to perform non-physical actions, that is, actions that do not essentially include to try to move the body. It is more plausible to claim that we make an effort to move the body if we have to overcome some resistance to do it.

There are two ways to conceive the resistance to the attempt to move the body. On the one hand, one can maintain that the body resists the will, which amounts to endorsing the dualist Biranian view according to which an effort is the attempt, by the will, to overcome the inertial resistance of the body. On the other hand, the view that I favour maintains that trying to move the body is an effort if the agent is motivated not to move her body. The most common example is the effort to get up in the morning. In

this kind of circumstances, we have to make an effort to move our limbs because we are motivated to not do so. The cosiness of the bed, the inertia of sleep, the hyper present feeling of fatigue and the perspective of a hard-working day outside are, for instance, factors motivating us to not get up. Trying to move the body can be an effort, just in case the agent is determined not to move her body.

This regularly happens in the morning. It also happens in much more dramatic and extreme situations. Think of an exhausted alpinist for instance who sits high up in the mountain, knowing (clearly or confusedly) that if she doesn't try to get up, she'll end up dying here. She needs to make a tremendous effort to move even half a limb. This is because there is no motivation to move anymore in her, while there is a profound desire to let it go to the deep attraction of some eternal sleep. But the lack of motivation to move (due to the comfort of one's bed or to the "comfort" of not moving for the exhausted alpinist) combined to some intrinsic motivation not to move (the state of fatigue in the morning; the ultimate exhaustion of the alpinist) is nothing but a (mild or immense) motivational *resistance*. The volitional theory makes a rule out of certain cases. If we agree that we can try such a thing as moving our own body, then we should only identify such attempts with efforts in the presence of some resistance.

12.2.2. Reply to the Exercise-Based View

(ii) **The Exercise-based definition**: an effort is a *voluntary exertion*.

- Making an effort is, for an agent, intentionally exercising her body.

I agree that intentionally exercising one's body often constitutes an effort, but I disagree that the exercise-based definition captures the essence of effort. Why should we believe, as we commonly do, that exercising the body is an effort? Sport physiologists explain what happens inside the body when it is exercised; which physiological modifications are going on. But this doesn't tell us yet why we should identify physical exercises with efforts. Why do we feel this inclination to identify physical exercise with effort? My proposal is that we identify physical exercise with effort because physical exercise very often requires to make mechanical efforts, that is, to overcome some mechanical resistances in the agent's environment. To see it, consider the resistance-based view that is the force-based account defended by Massin (Bermúdez & Massin, 2022; Massin, 2017, 2022a). It defines physical effort as a teleological exercise of mechanical force that is normally at least partly compensated by a force with opposite direction.

Effort *(Massin)* = *df*, "to make a physical effort to move a body is to exert a force on it, directly or indirectly, in order to make it accelerate or stay at rest, this force being either uncounteracted or partly or fully counteracted by an opposite force, the resistive force", (Massin, 2022, p. 5).

I have argued the force-based account correctly captures the essence of bodily effort, which is the effort of the agent's body on the external physical world. For now, the point I want to make is that if we intuitively consider the exercise-based view a plausible definition of effort, it is because a physical exercise usually consists in the intentional exercise of some force against some resistive force, that is, because it usually consists in an attempt to overcome some mechanical resistance of the physical world. Physically exercising, like when running, deadlifting, swimming, climbing, walking, stretching and so on, is making a bodily effort or a series of bodily efforts *because* something resists the exercise by the agent of her body. For instance, when you run, gravity and to some margin air molecules slow your movement down.

Thus, the exercise-based definition is roughly extensionally correct to the extent that it identifies efforts with actions that are normally bodily efforts. But it does not indicate the essence of effort. The essence of effort does not lie in the mere contingent fact that some efforts are exercises of the body. The essence of effort lies in the resistive relation between an effort and some resistance. The cyclist exerts forces that, through the mechanical work of the bicycle, pushes her onward. But the air molecules push in the exact opposite direction –air resists the cyclist's bodily exercise. The climber exerts forces that, through the tension in her body and thanks the characteristics of the wall, push him upward. But gravity pushes in the exact opposite direction. Physical exercises are usually efforts, not because effort is physical exercise, but because physical exercises most of the time require to overcome some resistance, namely the resistance of some forces in the agent's environment.

12.2.3. Reply to the Control-Based View

(iii) The Control-based definition: an effort is an *action of control*.

- Making an effort is, for an agent, intentionally controlling herself.

My reply to the control-based definition is similar to the reply I made to the exercise-based view. On the one hand, I do concede that controlling oneself can be an effort, but I refuse to reduce effort to controlling oneself. Controlling oneself is making an effort if and only if the agent hereby tries to overcome some resistance. It is not sure that controlling oneself necessarily is a conative effort: we might

call that the objection from "control freaks". Second, making an effort is not necessarily controlling oneself –efforts on oneself are often like that, but there are also efforts on the external world.

There are two problems with the control-based view of effort indeed. First, I do agree that controlling oneself is normally an effort. But the essence of effort is not control, it is resistance. If controlling oneself is usually an effort, this is because controlling oneself just is trying to overcome some internal resistance, some resistance coming in large part from oneself, such as an automatic behaviour response (losing focus, reading the colour of the word during a Stroop task) or a temptation. Thus, the control-based view is informative, but it does not capture the essence of effort. True, controlling oneself is usually an effort. But this is only because controlling oneself is identical in some conditions to trying to overcome some resistance, such as the cognitive resistance of one's own spontaneous reactions, or the conative resistance of a temptation to stop exercising control. The fundamental term is resistance, not control.

12.2.4. Reply to the Aversion-Based View

(iv) **The Aversion-based definition**: an effort is an *aversive action*.

- Making an effort is, for an agent, trying to perform an action she finds aversive.

Here again, my reply is to accept that trying to perform an action you find aversive is an effort, while denying that "aversion" captures the essence of effort. If performing such an action is an effort, it is because the aversion constitutes a motivational resistance. Trying to do what you find aversive to do is trying to do what you are determined not to do; it is trying to overcome some motivational resistance, namely the resistance of some con attitude towards the action you try to perform.

12.2.5. Reply to the Comparator Model

(v) **The difficulty-based definition**: an effort is a difficult action

- Making an effort is, for an agent, to perform an action with the feeling that it is difficult for her.

The comparator-model of agentive control has developed a theory of the feeling of effort, which entails that making an effort is acting in such a way that the agent feels that she has to do a lot to succeed in her action. Effort seems characterized as a difficult action, understood as an action performed with the feeling of mental effort. I would tend to agree that conative efforts are difficult action, if we

understand difficulty in terms of conative effort. Indeed, it is difficult to do what one intrinsically desires not to do. In fact, there are two possible connections between the comparator model and the agonistic definition. First, the feeling of "having to do a lot" may, contra the relatively explicit theory, motivate to disengage rather than to "do more". But if the feeling of "having to do a lot" motivates disengagement, then it would constitute some sort of motivational resistance. Second, the feeling of "having to do a lot", which is proximally caused error prediction signals during physical agency, may be one way in which we become aware of a (previously unknown) resistance to our action. The comparator model would thus be proposing an empirical theory of the realizers of the feeling that something resists to the agent. Thus, resistance and the comparator model can be related. On the one hand, error prediction signals may indicate to the agent the presence of a resistance she didn't anticipate; on the other hand, the feeling that the action is difficult for me can motivate the agent to give up what she's trying to do, hereby constituting or generating some motivational resistance.

12.2.6. Reply to the Investment-Based View

(vi) The Investment-based definition: an effort is a *costly action*.

- Making an effort is, for an agent, intentionally investing some limited resources.

The problem with the investment-based view, whether its generalized or specialized versions, is to reduce effort to an internal phenomenon. (A generalized version maintains that all actions are efforts because all actions are intentional investments of limited resources. A specialized version maintains that some actions only are efforts because efforts are intentional investment of some specific resources, like self-control resources). In any event, investment is a relation between the agent and her own resources. The investment-based concept of effort puts emphasis on the depleting character of agency, but it prevents us from, or at least does not give us the tools to consider the relational aspect of our agency, especially resistive relations. But agency is not reducible to one agent depleting herself, that is, to one agent in relation to her own resources. Understanding agency requires understanding relations among agents and powers, especially resistive relations. Investment-based views do not give us this possibility.

What is more, the investment-based view is at odds with certain phenomenological aspects of effort. That there is a quite distinctive feeling of effort, there is no doubt. But an agonistic definition is better positioned to account for this feeling. We have feelings of things that resist us: the feeling of mechanical resistance for instance, or the feeling of temptation, or perhaps even the feeling of other human beings acting against us. On the other hand, the investment-based view must equate the feeling of effort with

the feeling of depletion, of investing resources. However, it is unclear whether there is such a feeling. There is arguably a feeling of being deplete*d*, which is probably the feeling of fatigue; but it is unclear whether there is a feeling of ongoing deplet*ion*. Resource-focused views might be too influenced by the habit we have of considering things from a mechanized perspective, on the model of fuel-consuming machines and battery-based devices.

Once again, my proposal is to reduce the investment of resources to an effort if, and only if, this investment can be described as an attempt to overcome some resistance. In fact, there are two agentive situations where investing resources is related to resistance and effort. First, there is physical agency, physical exercise. As we saw above, physical exercise often is bodily effort. Bodily effort, or so I argued, consists in the exercise of forces against resistive forces from the environment, like when the climber contracts her muscles and exerts forces to move upwards while being resisted by the gravitational force. But if we adopt an internal focus, it is clear that the agent who exerts force with her body must at the same time invest her physiological resources. When it comes to such bodily efforts, the investment-based views can offer an instructive insight into the internal aspect of the exertion of force by the agent.

Second, there is also a situation where intentionally investing resources might be identical with an effort. This is when the agent is motivated not to invest resources. This happens, for instance, when the agent is tired. Fatigue, in this situation, works as a motivating mechanism that determines the agent not to invest resources. Therefore, investing resources boils down, for the agent, to the attempt to overcome the resistance against the investment. The agent is determined not to invest resources, so she makes an effort in order to invest some.

13. Conclusion

The goal of this dissertation was to clarify the nature of efforts. To do so, I have adopted an Aristotelian methodological framework that raised three questions about the nature of efforts. The first question was: what is the category of effort? I have argued that efforts belong to the category of teleological agency: making an effort is acting; it is for an agent to exercise some capacity in order to reach some goal. The second question was: what is the differentia of effort? What makes it the case that an action is an effort? I have argued that efforts are agonistic actions: actions that we perform in order to overcome resistive powers. Efforts are competitive actions, whose formal end is akin to a victory. The third question was therefore: what efforts are there? How many species of effort, if any? What does resist to our efforts? What powers do we exercise in our efforts? I have argued that there at least two species of effort, namely bodily effort and conative effort. Bodily effort is the exercise of the muscular power of our body to overcome opposite mechanical forces. Conative effort is the exercise of some self-mastering power to overcome contrary desires, desires not to perform a 1st order action because it is unpleasant. This conclusion sums up the key thesis of the agonistic account (13.1.) and opens the axiological discussion regarding the value(s) of effort (13.2.).

13.1. Effort as Agonistic Agency

The agonistic account I have developed has two layers. On the one hand, I have defended a substantial dualistic resistance-based view of bodily and conative efforts. It is the thesis that the ordinary notion of effort centrally refers to conative effort, which is the attempt to overcome a motivational resistance; and that it also marginally refers to bodily effort, which is the attempt to overcome a mechanical resistance. On the other hand, I have defended a formal agonistic definition of effort. It consists in the thesis that any potential species of effort, whether we conceive them in terms of bodily and conative species or in other terms, has the same formal agonistic structure: the concept of effort refers to the agonistic mode of teleological agency. This section sums up the principal ideas that I have defended: (13.1.1.) the capture of the folk notion of effort in terms of conative and bodily efforts; (13.1.2.) the dissolution of the four antinomies of effort; (13.1.3.) the formal agonistic definition and (13.1.4.) the place of effort in agency.

13.1.1. The Dualistic Resistance-Based Account of the Folk Notion of Effort

If resistance is the differentia of effort, one crucial question is: what does resist to our efforts? I have argued that we certainly make efforts against two resistive powers: contrary desires, and opposite forces. I have hereby captured, or so it seems to me, the ordinary notion of effort. The folk notion of effort centrally refers to efforts of will:

> Conative effort: the attempt, by an agent, to overcome a contrary desire, that is, the attempt to perform an action that the agent intrinsically desires not to perform because it is unpleasant for her.

> Conative Resistance: a conative effort is an attempt to overcome a conative resistance, that is, a contrary desire. A contrary desire is an intrinsic and immediate desire to give up the action the agent is doing because its performance is unpleasant:

(i) The object of the desire is an action that the agent is performing (*object*),

(ii) The desire represents in a negative way the action: it is a desire to stop what the agent is doing (*negativity*)

(iii) The desire can be satisfied immediately because no means-action is required, the agent just has to stop (*immediacy*)

(iv) It is an intrinsic desire because it is a desire to stop an action that is unpleasant, and that the unpleasantness of an action one does is an intrinsic motivation to give it up (*intrinsicality*)

One fundamental question about conative effort, which I haven't tackled, is how we can successfully make them. I have argued that efforts of will are sui-generis mental actions, whose function is to enable the performance (initiation or continuation) of a first-order unpleasant action that the agent intrinsically desires not to perform, due to its unpleasantness. I have left open the search for the causes of the unpleasantness of actions. I have extended the conative view by making explicit some of the many ways in which actions can be unpleasant to perform. I argued that the ordinary notion of effort centrally refers to conative effort because it is compatible with the possibility of a strict effortless agency, which seems central to our ordinary conception. But I also maintained that the ordinary notion of effort refers too, albeit marginally, to bodily effort. We make bodily efforts almost at any time, but we generally pay attention to them when they are sufficiently intense to be felt, or when they become unpleasant and require a conative effort to be continued.

Bodily effort: the exercise, by an agent, of the muscular power of her body to overcome a mechanical resistance.

Mechanical resistance: a mechanical resistance is a Newtonian force that determines the default kinetic behaviour of the agent's body in a way that is directly incompatible with the successful realization of a teleological sequence that the agent is trying to achieve.

13.1.2. Dissolution of the Four Antinomies

I, thus, committed to this dualistic resistance-based account. It is committed in terms of what powers and efforts there are. It is dualistic because it recognizes two species of effort, one being mental and the other physical. But it is not a dualist view, because it doesn't postulate causal relations between mental and physical powers. With this dualistic resistance-based account, I have solved two of the four little antinomies of effort. What I called the little antinomies of effort refer to four pairs of contrary propositions concerning four essential questions about the nature of effort, its phenomenology and its relation to agency:

(i) **The token-puzzle**: what is it for an action to be an effort?
   a. *Identity*: an effort is an action.
   b. *Property*: effort, effortfulness that is, is a property of an action.

(ii) **The type-puzzle**: is every action an effort?
   a. *Type-identity*: every action is an effort (or effortful).
   b. *Type-specification*: some actions are not efforts (or effortful).

(iii) **The phenomenological puzzle**: is every effort felt?
   a. *Subjectivism*: every effort is felt.
   b. *Objectivism*: some efforts are not felt.

(iv) **The species puzzle**: are there species of effort?
   a. *Unity*: there is no species of effort.
   b. *Non-unity*: there are species of effort.

The resistance-based distinction between bodily and conative effort solved the phenomenological- as well as the type-puzzles. (i) With respect to the phenomenology of effort, subjectivism is true about conative effort. Every conative effort is felt because a conative effort is an attempt to perform an unpleasant action, and unpleasantness is felt by definition. But objectivism is true for bodily effort: not every bodily effort is felt, for we make bodily effort whenever we act physically, although we don't have an experiential access to every bit of our physical agency. (ii) With respect to the type-puzzle, type-identity is true for actual bodily efforts: any physical action is bodily effortful in this world because any physical action requires to overcome opposite forces, like gravity for a climber, air molecules for a cyclist

or water molecules for a swimmer. Type-specification is true for conative effort: some actions only require a conative effort, because some actions only are unpleasant to perform.

(iii) With respect to the species-puzzle, I implied that there are species of effort by distinguishing bodily from conative efforts; but I maintained that they belong to the same generic definition, which is the agonistic definition of effort –which is also compatible with the unity-claim that there aren't species of effort. (iv) With respect to the token-puzzle, I have argued that efforts are genuine actions for two reasons. On the one hand, an effort of will is a specific 2nd order mental action that aims at performing a 1st order unpleasant (mental or physical) action. On the other hand, the acceptance that efforts are specific agonistic actions, whose goal is just to overcome resistive powers, both gives a specific role for the concept of effort in the grammar of agency (hereby improving our general understanding of this category) and provides a precise criterion of individuation, as it enables to distinguish actions that are efforts from actions that merely require an effort, that are effortful. I maintained that an effort can be a property of an action, but only in the sense of being a mereological part of a complex action.

13.1.3. The Formal Agonistic Nature of Effort

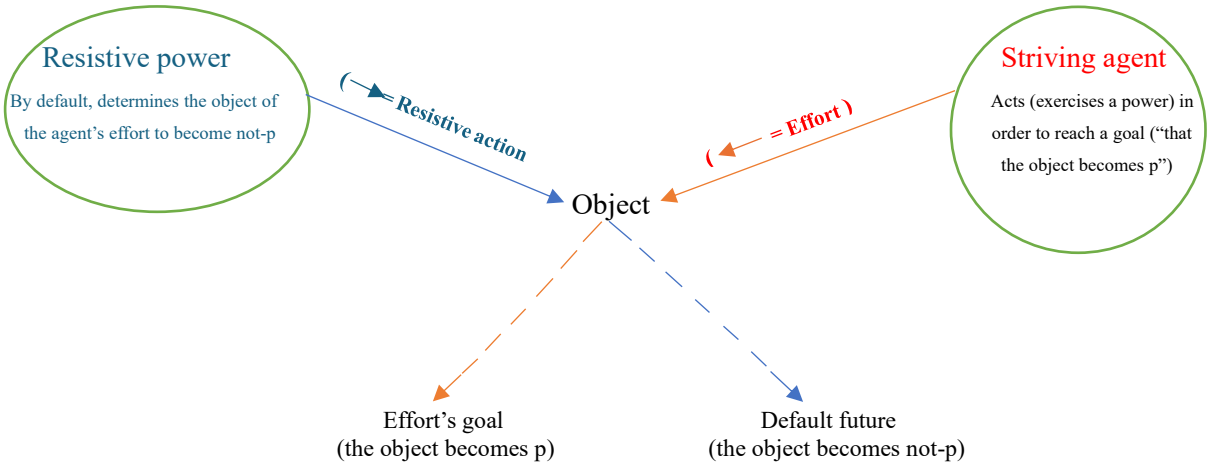
In addition to the dualistic and commonsensical account of bodily and conative efforts, I have also developed a formal resistance-based definition of effort, for three main reasons. A first objective was to capture the common structure behind all the resistance-based approaches to effort which, although they have different substantial views about resistance, nevertheless conceive efforts in terms of overcoming a resistance. A second objective was to preserve the generic unity of the kind "effort" after I have distinguished bodily from conative effort. A third objective was to leave the door open to other potential species of effort, such as cognitive and intellectual efforts. The formal resistance-based definition that I forged, is what I have called the agonistic definition.

According to the agonistic definition, an action takes effort (has an effort as a proper part) if its successful performance requires to overcome some resistance. An action is an effort (is token identical with an effort) if its goal is to overcome some resistance. The concept of effort refers to agonistic agency, agency characterized by struggle. Struggle comes in our way when we want to reach a goal that requires to negate the determined causal order of the world. Struggling is facing some resistance during one's attempt to reach a goal; making an effort is trying to overcome the resistance preventing the agent from reaching her goal. An agent tries to overcome a resistance simply if she tries to produce an effect *p* to some object in circumstances where some power(s) determines this object to undergo, by default, a contrary effect *not-p*. An effort is in fact an attempt by the agent to substitute the initial determinant of

an object's behaviour (determining the object to become *not-p*) with the power she exercises during her effort (in order to cause the object to become *p*) in order to reach some further goal. We make efforts when we try to substitute an initial causal determinant with a contrary determinant: some power determines some object to become *not-p* by default; but we make an effort to cause the object to become *p*.

The object can be a physical body; it can be our own behaviour (what we do and believe); it can be the behaviour of someone else (what someone else does and believes). For instance, gravity determines weights to fall, but one can make an effort to move upward, as in rock-climbing. In this situation, the agent tries to substitute the default determinant of the kinetic behaviour of her body (gravity) with the contrary power of her effort (her muscular power): she makes a bodily effort to overcome the mechanical resistance of the gravitational force, in order to reach the top and enjoy the view. Or, for instance, a temptation determines the agent to give in to the temptation, but she can make an effort to avoid this default behavioural trajectory. She makes an effort if she tries to substitute the default determinant of her behaviour (an immediate desire) with the power that her effort manifests (self-control). By default, our education determines what we think. But we can make an effort to put into question what we are determined to believe, as Descartes' radical doubt epitomizes. If we do, we then try to substitute the initial determinant of what we think (education) with the power exercised during our effort (reason).

Making an effort is trying to do what one is determined not to do, *that is*, substituting the initial determinant of one's behaviour with the power exercised by the agent during her effort. In one word, it is trying to overcome a resistance. Some power has determined the world to be a certain way in certain circumstances, but the agent has formed an intention whose satisfaction requires that the world goes in some contrary way. If she is to satisfy this intention in action, she must make an effort. If she wants to satisfy her intention, she must do something against the resistive power, which by default determines the world in a way that is incompatible with the satisfaction of her intention. Namely, she must substitute herself to the resistive power. The striving agent must try to replace the resistive power with one of her powers, which she manifests during her effort. Efforts are special actions, with a special goal: they are fighting actions, whose sole purpose is to replace a resistive, contrary power with the agent's power. To render this thesis more intuitive, I included the following illustration while I was discussing the formal nature of resistance:



Effort: a goal-directed action performed by the striving agent
For instance, St Augustin's attempt to overcome his bodily passions; Rocky's attempt to overcome his Russian opponent, Drago; Socrates' attempt to overcome Gorgias' arguments.

Resistance: manifestation of the resistive agent\power
The temptation of St Augustin; the boxing of Drago; Gorgias' argumentation.

Result of the manifestation of the resistive power (by default and if the effort fails).
St Augustin succumbs to Passion; Rocky loses to Drago; Gorgias remains a sophist and still thinks his initial beliefs are true.

Goal of the effort (result of the effort if it succeeds).
St Augustin acts according to reason; Rocky beats Drago; Gorgias admits he was wrong.

Object: the behaviour of a region of reality that is the object of both the effort and the resistance, the portion of reality through which the striving agent competes with the resistive power.
For instance, the struggle between passion and reason inside Augustin's mind; the unfolding of the boxing contest between Rocky and Drago; the debate between Gorgias and Socrates.

13.1.4. The Function of Effort in the Grammar of Agency

The agonistic account attributes a specific theoretical role to the concept of effort in the grammar of agency, and a specific causal role to real efforts in the structure of reality. Indeed, the agonistic account proposes to "reach" effort by a series of three distinctions. First, we must distinguish actions from goal-directed actions; second, we must distinguish resisted from unresisted goal-directed actions; third, we must distinguish directly from indirectly resisted actions (that is, actions taking efforts from actions requiring efforts). To easily identify efforts, I have proposed a conditional definition of effort. It expresses the formal conditions that must be met, so that we can identify the action of an agent with an effort. Namely:

Conditional definition: an agent makes an effort iff:

(i) *Resistance*: some power R determines an object O to become not-p in circumstances c.

(ii) *Rebellious intention*: the agent intends that the object O becomes p in the circumstances c.

(iii) *Effort*: the agent tries to cause O to become p in circumstances c.

The rebellious intention needs not be rebellious for the agent. That is, an agent needs not be aware that what she tries to do, is to cause a change that is directly contradicting the determined behaviour of the world. Bears climb trees and make efforts to overcome gravity hereby, but they probably don't know that this is what they do. Also, I have noted that the goals of effort are normally instrumental goals. We make efforts insofar as we try to overcome resistances (overcoming a resistance is the end of an effort); but we usually try to overcome resistances in order to do yet something else. When an alpinist climbs, she tries to move her body upwards, and this trying is identical with her trying to overcome the mechanical resistance of gravity. But she does that in order, for instance, to reach the top and experience the eternal silence of ethereal landscapes. When an athlete takes part to a 10 000m race, she tries to persist in her running at a certain pace, and this trying is usually identical with her trying to overcome the motivational resistance generated by her body. But she does that in order to win the race, to qualify for the next international event, or to win new sponsorships.

In terms of individuation, I have thus argued that we should distinguish actions that are efforts and actions that take efforts. An action is an effort when it can be redescribed salva veritate as an attempt to overcome a resistance. An action takes effort if it includes an effort in its performance, or if its successful performance requires a successful effort first. Two reasons motivate the reduction of efforts to actions aiming at overcoming resistances. First, it enables to have a precise criterion of individuation and identification: efforts are agonistic actions, and agonistic actions only. Second, we hereby attribute a specific function to the concept of effort in the grammar of agency. Making an effort is fighting something, struggling with something; effort refers to agonistic agency; agency in which the world, oneself or others appear as adversaries. But we can only fight and struggle if we have, at some minimal derivative level, the goal of defeating what we fight, that against which we struggle. In metaphysical terms, fighting something means trying to overcome a resistance. A resistance is any commensurable power that determines some object to behave in a way that is incompatible with an intention that the agent tries to satisfy through action. An effort is an action aiming at replacing a resistive power by itself. The agent of effort aims at "ontological dominance": her goal is to become, through her effort, the main determinant of the behaviour of a given object, instead of the default resistive power.

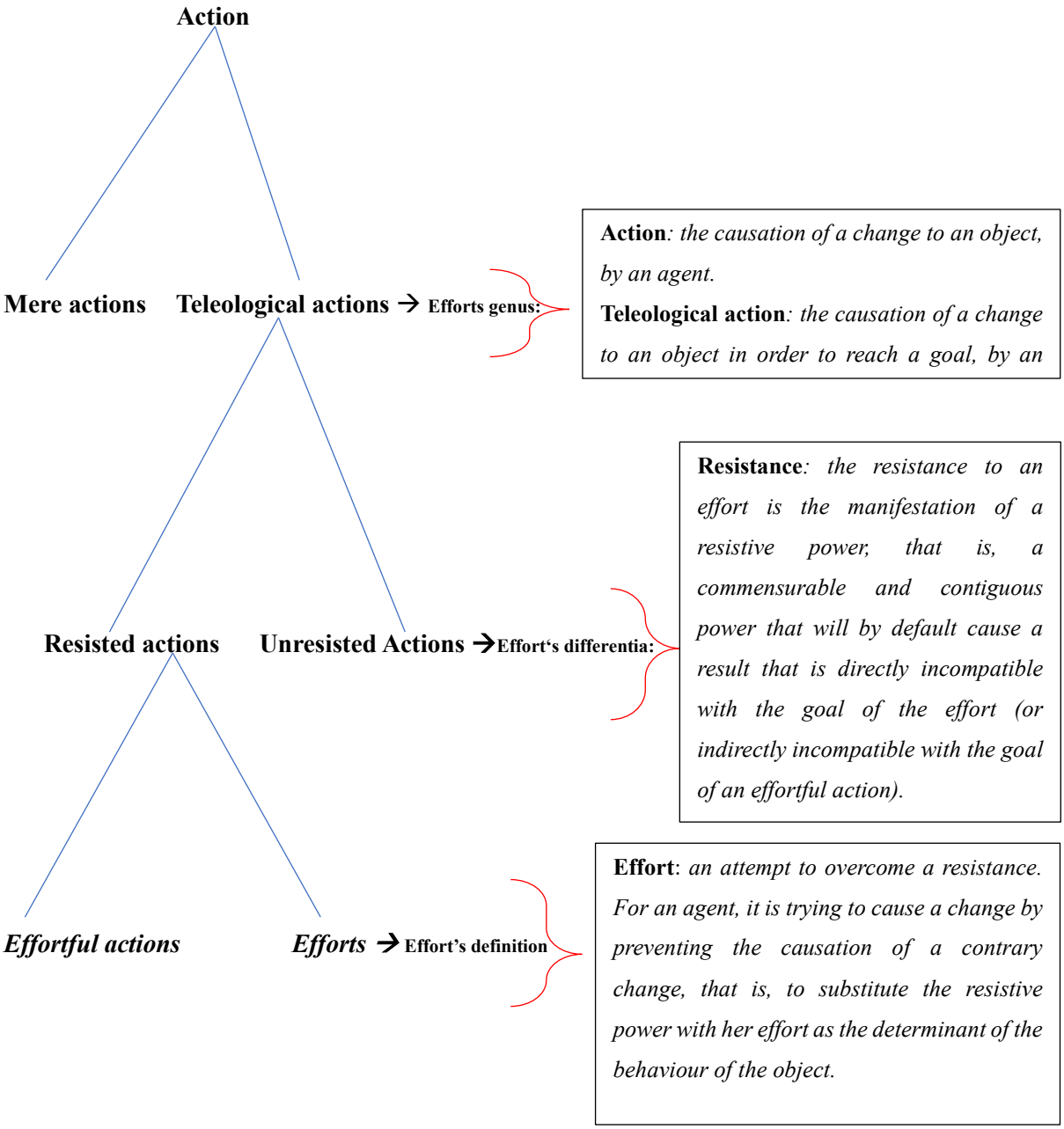
The agonistic definition: an effort is an attempt to overcome a resistance.

Resistance: a resistance is (i) a power (ii) manifesting itself in determining the default behaviour of the object of an agent's effort, (iii) in a contiguous way (the effort and the resistance pertain to the same object, at the same time, and are manifestations of commensurable powers) and (iv) in a contrary way (the respective independent results of the resistance and the effort are mutually exclusive).

Overcoming. the goal of an effort is a result that is the overcoming of a resistance. Overcoming a resistance is, for an agent, to replace the resistive power with the power she exercises during her effort as the (total, partial or relevant) determinant of the behaviour of a given object on a certain occasion. Making an effort, as a process, is *trying* to overcome the resistance.

Being an effort: an action is an effort if its goal is to overcome a resistance. To successfully make an effort, it is necessary and sufficient to overcome a resistance.

Taking an effort : an action takes an effort if its goal requires, but is not, to overcome a resistance. To succeed in an action that takes effort, it is necessary but not sufficient to overcome a resistance. An action takes effort if it has an effort as a proper part.


Action
Mere actions
Teleological actions → Efforts genus:
Action: the causation of a change to an object, by an agent.
Teleological action: the causation of a change to an object in order to reach a goal, by an
Resisted actions
Unresisted Actions → Effort's differentia:
Resistance: the resistance to an effort is the manifestation of a resistive power, that is, a commensurable and contiguous power that will by default cause a result that is directly incompatible with the goal of the effort (or indirectly incompatible with the goal of an effortful action).
Effortful actions
Efforts → Effort's definition
Effort: an attempt to overcome a resistance. For an agent, it is trying to cause a change by preventing the causation of a contrary change, that is, to substitute the resistive power with her effort as the determinant of the behaviour of the object.

13.2. What Space for Struggle in Existence?

I have dedicated this work to developing a formal and generic definition of effort; I have argued that there are two species of effort, and I have tried to show in what sense these two species can be sufficient to account for the ordinary notion of effort. Two questions are left pending by this work. First, the question of the powers that we exercise during conative effort has been left aside for another time. I have argued that a bodily effort is the exercise of the muscular power of the body, but I have not engaged with the question of the nature of the powers at stake in conative effort, which I referred to as a "self-mastery" or "self-control" power. Secondly, I have also overlooked the problem of the value of effort. To conclude, I will however make three remarks concerning the value of effort. The first remark is that there can be bad efforts: the value of effort can be negative. The second remark is that effort has a fundamental value for society. The third remark is that effort also has a fundamental value for individuals. But if it is probably necessary for the good life, it is not sufficient.

13.2.1. Detrimental Efforts

First, it is clear that there can be bad efforts, efforts that are good neither subjectively for the agent, nor objectively. For instance, there can be criminal efforts, on the model of Raskolnikov in Crime and Punishment. Indeed, he goes through a length of effortful actions whose aim is killing. In a different vein, anorexia cannot go without numerous repeated efforts. The agent is intrinsically motivated to eat and overcomes this desire through repeated efforts. But the success of such efforts is clearly destructive. In similar fashion, "bigorexia" refers to an addiction to sport, to physical effort that is. Such efforts are negative, to the effect that they are destructive for the agent, whether it is her health, her social relations or her professional life.

13.2.2. The Anthropological Value of Effort

Second, effort has a fundamental value for society if we assume the view that society only holds because we can repress the manifestations of our desires, that is, because we can overcome some desires whose manifestation would be incompatible with the maintenance of a minimal social order. A society without efforts would arguably not be a human society. Now, this doesn't entail that a specific society is right to attribute the explicit values that it attributes to the putative effort of its members. For

instance, some would cast doubt on the idea that the economic organization of our global society really reflects the efforts made by the individuals. But that question aside, it is plausible that any society must presuppose that its members are capable of overcoming certain desires. It is especially true if one believes that the human being is not "naturally good and corrupted by society", but that society must somehow repress fundamental destructive drives of the individuals if it is to persist as a society. After all, the capacity to repress the manifestation of some intrinsic and immediate desire is a, if not the basis of education, both at the familial and collective levels.

13.2.3. The Values of Effort for Individuals

Third and finally, effort clearly has a positive value for the individual. This is true in two respects. On the one hand, it is *instrumentally* true. It is instrumentally true in a trivial way: making efforts enable to obtain good diploma, social positions, etc. But it also seems true in a more profonde way. One could defend the view that long-term transformative efforts are essential for the flourishing of an individual. For, without such efforts, she will not overcome some dispositions that may be detrimental to her. For instance, without intellectual effort, an individual is doomed to simply inherit the belief of her social group, milieu and period. It normally demands efforts to question what one believes, on the model of the cartesian methodological doubt. Without such efforts, one merely expresses the point of view of her psychological, familial, cultural and ideological origin.

On the other hand, effort may be *finally* good for the individual if we presuppose the two following ideas. First is the idea that the essence of human beings is to thrive, to grow in power, knowledge and feelings. Second is the idea that it is through struggle that one grows the most. If these two ideas are true, then one must make efforts because it is through such efforts that one strengthens one's powers, which is a final good. Effort would be necessary for the good life in two respects: instrumentally, to overcome one's own determinisms and becomes a full-blown individual; and finally, to grow in power.

However, the view that effort is sufficient for the good life seems too extreme and hereby false. If effort does refer to the agonistic mode of agency, then making an effort entails a fundamental division. In effort, there is a scission between the individual and the external world, a scission within the individual's herself; a scission between the individual and others. If agonistic agency is probably essential to the good life, it is only one of two fundamental aspects of life. For if agonistic agency is struggle and division; life is also union, fusion and love. Effort is necessary to the good life to the extent that a life without struggle is a life where the agent doesn't grow in powers and just remains the product of her

determinisms; but a life exclusively dedicated to struggle is a life of division deprived of the experience of union and synthesis with the world, with oneself and with others.

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