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The Dual Nature of Properties: The Powerful Qualities View Reconsidered

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A thesis submitted in fulfilment of the requirements for the degree of
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Abstract

Metaphysical orthodoxy holds that a privileged minority of properties carve reality at its joints. These are the so-called fundamental properties. This thesis concerns the contemporary philosophical debate about the nature of fundamental properties. In particular, it aims to answer two questions: (1) What is the most adequate conception of fundamental properties? (2) What is the “big picture” world-view that emerges by adopting such a conception? I argue that a satisfactory answer to both questions requires us to embrace a novel conception of *powerful qualities*, according to which properties are at once dispositional and qualitative. By adopting the proposed conception of powerful qualities, an original theory of fundamental properties comes to light. I call it *Dual-Aspect Account*. In this thesis, I defend the Dual-Aspect Account and its superiority with respect to rival views of fundamental properties. I illustrate this claim by examining Dispositionalism, the view defended among others by Alexander Bird and Stephen Mumford, Categoricalism, which has been advocated notably by David Lewis and David Armstrong, and the Identity Theory of powerful qualities, primarily championed by C. B. Martin and John Heil. The latter is the standard conception of powerful qualities. However, in the literature, the Identity Theory faces the charge of contradiction. A preliminary task is therefore to show that a conception of powerful qualities is coherent. To accomplish this aim, I introduce the notion of an aspect of a property. On this interpretation, powerful qualities can be thought of as having dispositional and qualitative aspects. I show that such a conception allows us to disambiguate the claim that a property’s dispositionality is identical with its qualitativity, and evade the charge of contradiction. Aspects bring us other theoretical benefits. I illustrate this claim by showing how the Dual-Aspect Account offers us a promising theory of resemblance. I then compare its merits with David Armstrong’s theory of partial identity. The conclusion of this thesis is that the Dual-Aspect Account is better suited to capturing the world as we find it in everyday life and scientific investigation as compared to the theoretical positions examined.

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Preface

Whether we approve or not, the world that we inhabit appears to be populated by objects that have properties. It also appears that some of these properties carve reality at its joints. These are the so-called fundamental properties. This work represents an attempt to set out and defend a novel theory about the nature of fundamental properties that is superior, I believe, to rival views in the literature.

Since it has taken quite some time to write, I have presented parts of the dissertation at various stages in many places, and received precious feedback from a great number of people. I wish to thank my advisory team, Stephan Leuenberger and Fiona MacPherson, for their time, patience, and guidance provided throughout this research project. In addition to my advisory team, I owe significant philosophical debts to Alex Carruth, Umut Baysan, John Heil, Fraser MacBride, Anna Marmodoro, Neil McDonnell, Stephen Mumford, Galen Strawson, Henry Taylor, Matthew Tugby, and Jessica Wilson.

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Author's Declaration

I confirm that this thesis is my own work and that I have: (i) read and understood the University of Glasgow Statement on Plagiarism, (ii) clearly referenced, in both text and the bibliography or references, all sources used in the work; (iii) fully referenced (including page numbers) and used inverted commas for all text quoted from books, journals, web, etc.; (iv) provided the sources for all tables, figures, data, etc. that are not my own work; (v) not made use of the works of any other student(s) past or present without acknowledgement. This includes any of my own works, that has been previously, or concurrently, submitted for assessment, either at this or any other educational institution; (vi) not sought or used the services of any professional agencies to produce this work; (vii) in addition, I understand that any false claim in respect of this work will result in disciplinary action in accordance with University regulations.

I declare I am aware of and understand the University's policy on plagiarism and I certify that this thesis is my own work, except where indicated by referencing, and that I followed the good academic practices noted above.

Author's Signature

CHAPTER 1

INTRODUCTION

Metaphysics is an ambitious subject: it aspires, among other things, to give an account of the fundamental constituents of any reality and an exposition of how these constituents mesh to give us the reality in question. Indeed, some metaphysicians aim to deal not just with the actual but with all possibility as well. I myself think actuality is enough to be going with. (Campbell 1990, 1)

In the present climate of metaphysics nothing is more important, I think, than the recognition of properties and relations as fundamental constituents of reality. (Armstrong 1992, 14)

1.1 Aims

Everything that exists is in some ways or others. These ways are properties (Armstrong 2010, 6–7; Heil 2012, 3–4). Snow is white, glass is fragile, and electrons are negatively charged. Being white, being fragile, and being negatively charged are ways snow, glass and electrons respectively are. Accordingly, these ways are properties of snow, glass, and electrons.

Standardly, properties are held to be entities that can be predicated of things. On this view, properties are abundant: for any predicate, be it gerrymandered as you like, there is a corresponding property. Yet we have an overwhelming sense that some properties are natural while others are not (Lewis 1983). Being negatively charged, being disposed to exert gravitational force, and being fragile are few examples of natural properties. In contrast, being a member of the Parliament, being blue or green, and being self-identical are some examples of non-natural properties. In turn, some properties appear to be more natural than others. For example, being negatively charged seems to be more natural than being fragile.

Natural properties carve reality at its joints. They ground objective similarities among things and their causal powers (Lewis 1986a, 60). Among them, there is a privileged minority whose members “suffice to characterize things completely and without redundancy” (ibid.). These privileged natural properties “figure in a minimal basis on which all else supervenes” and are such that no two possible worlds having the same pattern of their instantiation “could differ in any other way” (Lewis 2009, 205). These are the so-called fundamental properties.

This dissertation is about the fundamental properties of our world. It aims to answer the following questions: (1) What is the most adequate conception of fundamental properties? (2) What is the “big picture” world-view that emerges by embracing such a conception?

These two questions are related. It goes without saying that an answer to (2) presupposes an answer to (1). But the tenability of a conception of fundamental properties partially depends on the plausibility of its resulting big picture world-view. We need to impose some constraints on the investigation that I will pursue in the following chapters.

To begin with, an adequate conception of fundamental properties ought to accommodate the world as we find it in everyday life and scientific theorising. To abide by this constraint, the notions of dispositionality and qualitativity play a central role in the present work. Dispositionality is a matter of what a thing is disposed to do in certain circumstances. Qualitativity is a matter of how a thing is like independently from its dispositions. As it happens, qualitativity is often confined to the manifest image of the world we receive from everyday life. In contrast, dispositionality is typically associated with its scientific image. It is no dramatic revelation that the contrast between dispositionality and qualitativity mirrors the clash between these two images. The challenge to accommodate dispositionality and qualitativity in a unified way is therefore difficult for it requires overcoming the apparent clash between the scientific and ordinary pictures of the world.

Two dominant conceptions of fundamental properties reflect the division between dispositionality and qualitativity. The possession of dispositional properties empowers their bearers with distinctive dispositions that are manifested in appropriate circumstances. The possession of qualitative properties, which are often called “categorical”, contributes to how their bearers are like without necessarily conferring upon them any dispositions. Call *Dispositionalism* the view that all fundamental properties are dispositional. Call *Categoricalism* the view that all fundamental properties are qualitative. As it will become clear in due course, the choice between Dispositionalism and Categoricalism leads to two opposing pictures of the world and its laws of nature.

In the interest of capturing the world as we find it, we need a conception of fundamental properties that reconciles the dispositional and the qualitative. We make sense of the world by how things affect us in various possible circumstances. Yet things are not always manifesting what they are disposed to do. The world appears to be overtly qualitative. Of course, we could embrace a form of dualism and maintain that some fundamental properties of our world are dispositional and others qualitative. However, the assumption of dualism as a starting point would offend against a principle of parsimony; dualism ought to

be our last resort when all monist views fail. Fortunately, there is another monist view available that does not bifurcate dispositional and qualitativity.

The view in question is the *powerful qualities view* primarily championed by John Heil (2003; 2012) and C.B. Martin (2008). According to it, every fundamental property is at once, in a sense to be clarified, dispositional and qualitative. Yet the standard version of the powerful qualities view faces the charge of contradiction. Metaphysical orthodoxy maintains that the qualitative is non-dispositional. At first glance, the powerful qualities view appears to be incoherent: on such a conception, no property could be simultaneously dispositional and qualitative. My aim in this dissertation is two-fold: first, I will examine whether the contradiction objection against the powerful qualities view is sound; second, I will articulate and defend a novel account of powerful qualities that evades this objection. I will show that the proposed view is superior to the standard version of powerful qualities and its main rivals, namely Dispositionalism and Categoricalism.

The criteria for deciding between the proposed account of powerful qualities and its rivals are the standard ones: internal coherence, explanatory power, trade-off between costs and benefits, simplicity, empirical adequacy, and so on. It is not easy to spell out these criteria. The question of how to evaluate them in precise terms remains opaque. I shall leave these worries aside and assume that we have a sufficiently good grasp of them.

I cannot start from scratch, however. In what follows, I will lay out some assumptions which I shall presuppose throughout the next chapters. At any rate, these assumptions are shared by the leading participants in the debate that I will address. After that, I will outline the structure of the dissertation.

1.2 Property Realism

Whether the reader approves or not, I will embrace property realism. As I shall understand it, this is the view that natural properties are real entities of the world's furniture, which "exist independently from the classifying mind" (Armstrong 1978a, xiii). Such a characterisation does not force us to embrace the view that all abundant properties exist mind-independently. This is a stronger claim which I do not endorse. The restriction to natural properties allows us to escape the intuitive implausibility of admitting some mind-independent abundant properties. Here is an example: consider the abundant property of being a graduate student at the University of Glasgow. Intuitively, this property cannot exist mind-independently. Were humans cease to exist, so it would be for the property of being a

graduate student at the University of Glasgow. To be a realist about this property implies that it can exist even if no human exists or ever existed. This does not seem quite right.

Property realism opposes views that consider properties as “parasitic on predicate expressions” (Searle 1969, 120). On these views, to say that a thing has a property is nothing more than for a predicate to apply to that thing. There is nothing in virtue of which the predicate applies to such a thing (cf. Armstrong 1978a, 13). For example, to say that a marble has the property of being white means that the predicate “is white” applies or is true of that marble, and that is all.

In similar vein, property realism contrasts with views according to which the possession of properties is nothing more than belonging to certain classes or sets (cf. Armstrong 1989a, 8–9). On these views, something has the property of being negatively charged if it is a member of the class of negatively charged entities.

To emphasise the difference, property realism can be understood as the view that an object’s natural properties offer a ground for the applicability of certain predicates and class-membership. For example, it is in virtue of the property of having elementary charge that electrons can be grouped together or that the predicate “has elementary charge” applies to each of them.

1.3 Property Monism

My focus will be on views that adopt property monism, the doctrine that all fundamental properties belong to the same kind only. Therefore, I will not examine dualist proposals that deny this doctrine. The assumption is methodological: for the sake of ontological parsimony, dualism ought to be our last resort. The idea is to begin the investigation of the most adequate conception of fundamental properties from a monist perspective. Only if the conception in question fails to accommodate some relevant cases, the drift into dualism is permissible.

Dualism is *prima facie* unattractive. It faces the difficult challenge to explain how the different kinds of property admitted in one’s ontology are related. A standard approach is to posit a distinctive relation that serves the purpose. However, it is well-known that this strategy is problematic: the mere existence of a relation does not warrant that the kinds of property in question are related in “the right way”. It seems that we need to invoke a further relation to ensure that the first one we posited and the properties are adequately related. But a vicious regress arises. The initial problem is reiterated (cf. Bradley 1893, 32–33). It is matter of debate whether we can successfully resist the regress without invoking irreducible

relations (see MacBride 2016 for an overview of the strategies). My claim here is different, namely that it is best to avoid entering this debate insofar as is possible.

1.4 Natural Properties

David Lewis's distinction between natural and non-natural properties is part of contemporary metaphysics orthodoxy (1983). In what follows, I will embrace the orthodoxy. Namely, I will assume a joint-carving distinction between natural and non-natural properties without further comment. However, I acknowledge difficulties in making the idea of naturalness more precise. In a famous passage, Lewis depicts natural properties as follows:

Sharing of them makes for qualitative similarity, they carve at the joints, they are intrinsic, they are highly specific, the sets of their members are ipso facto not entirely miscellaneous, there are only just enough of them to characterize things completely and without redundancy. (1986a, 60)

Lewis's characterisation of natural properties comprises a number of distinct notions: qualitative similarity, "joint carving"-ness, specificity and what can be called "completeness" (Bennett 2017, 107). It is unclear how these notions relate to naturalness. Here various interpretative strategies unfold. However, I shall not attempt to fix on one of these interpretations. Nor I will discuss the differences among them (Schaffer 2004; Dorr and Hawthorne 2013; Bennett 2017, 126). Rather I will assume that naturalness can be understood as a theoretic term which describes a certain role that some natural properties can play.

Natural properties are best understood in opposition with abundant properties. The latter do not account for objective resemblances among particulars. Nor do they capture the powers of things for they are causally irrelevant. Abundant properties can be extrinsic or disjunctive, and they "far outrun the predicates of any language we could possibly possess" (Lewis 1986a, 59). If we follow Lewis, who conceives of properties as sets, then properties are as abundant as the sets themselves. For each set, there is the property of belonging to that set (Lewis 1986a, 60). In the following chapters, I shall restrict my attention to natural properties only.

Lastly, I recognize a distinction between two conceptions of natural properties (Schaffer 2004). According to a *scientific conception*, natural properties are those invoked by all scientific disciplines such as physics, chemistry, biology, and so on. According to a

fundamental conception, the natural properties are only those invoked by fundamental physics. The account of properties that I will defend does not force us to choose sides. It is in fact compatible with both conceptions.

1.5 Fundamental Properties

This dissertation concerns the fundamental properties of our world. I will assume that there are in fact fundamental properties. This assumption is methodologically profitable. By making this assumption, however, I concede that our world might be such that there is no absolute fundamental level (Schaffer 2003). If this were the case, the fundamentality in question must be understood in a relative sense. That is, the fundamental properties would be those that are more fundamental than any other ones—given a dummy fundamental level.

As for naturalness, let us stipulate that to be fundamental is to play a certain theoretical role. The assumption is therefore that there are properties that play the role of being fundamental. However, I will not attempt to define what it is for a property to be fundamental. This task would require a separate investigation. In what follows, I will conceive of the fundamental properties in a Lewisian sense: they are those privileged natural properties described in §1.1, which “suffice to characterise things completely and without redundancy” and provide a “minimal basis on which all else supervenes” (Lewis 1986a, 60; 2009, 205). The conceptions of properties that I will discuss in the following chapters are suitable for different views of fundamentality. Therefore, my claim is not that a Lewisian conception of fundamental properties is the most adequate one. Rather my claim is that a Lewisian conception captures some desirable features of a workable notion of fundamentality.

There are two main reasons for remaining uncommitted on fundamentality. First, the views of properties that I will discuss can fit different conceptions. Second, there is no consensus on how to understand precisely the notion of fundamentality. As such, it is best to avoid this discussion for it would divert us from the purposes of this work.

The views of properties that I will discuss are sympathetic to the idea that physics, among other things, is in the business of discovering the fundamental properties of our world. Some classic examples of putative fundamental properties are charge, mass, and spin. However, physics is inevitably work in progress. We ought to proceed with caution. I will often mention these properties for illustrative purposes only. It might well be that charge, mass, and spin will be turn out to be less fundamental than other physical properties in light of future discoveries.

There is a related problem. The formalism of physics does not “wear an ontology on its sleeves” (Esfeld 2014, 259). In the following chapters, the question of how to read off the ontological commitment from a physical theory will remain unaddressed. The empirical adequacy of a theory of natural properties is of course a decisive choice-point in its favour. Our fundamental ontology must be metaphysically adequate as well as scientifically informed. However, the question of how to formulate an account of fundamental properties is not the business of physics. The spirit of the dissertation is nicely captured in C. B. Martin’s words:

Ontology sets out an even more abstract model of how the world is than theoretical physics, a model that has placeholders for scientific results and excluders for tempting confusions. Ontology and theoretical science can help one another along, we hope, with minimal harm. (Martin 2008, 42)

1.6 Tropes and Universals

Properties are invoked to account for similarities among things. The more properties two objects share, the more they are similar. A cat and a jaguar might have the same colour, but they might differ in size; all electrons have the same charge; a ceramic mug and a crystal vase are resembling with respect to their fragility. There is an unsettled dispute on how to make sense of the idea of sharing some properties. Two standard conceptions are available: universals and tropes.

Traditionally, a universal is a property that is capable of being possessed by many entities. Accordingly, objects can share a universal in the sense that one and the same property can be possessed by numerically distinct objects which might be differently located. For instance, all scarlet marbles share the property of being scarlet. If being scarlet were a universal, all scarlet things would instantiate one and the same property of being scarlet.

In contrast, a property thought of as a trope, or particular is possessed by only one entity. Accordingly, objects cannot really share tropes; at most, they can have numerically distinct and yet exactly resembling tropes. If being scarlet were a trope, two scarlet marbles would be similar in the sense of having two numerically distinct properties, *scarlet₁* and *scarlet₂*, which are nonetheless qualitatively identical.

Both conceptions have costs and benefits. However, the choice between universals and tropes rests on independent factors. With minor amendments, the views of properties that I will discuss can be adapted to fit either view. The assumption of a real distinction

between tropes and universals is open to criticism (e.g. MacBride 2005). However, I shall not discuss further this issue. For illustrative purposes, however, I will treat properties as universals. This allows us to avoid some unnecessary complications which could obscure the main goal of this work, namely setting out and defending a novel account of powerful qualities. Two remarks are needed: first, the conception I will offer is available for both the tropes theorist and the friend of universals; second, the standard version of the powerful qualities view is presented as tropes view. However, as I will explain, this is an independent commitment that we are not forced to endorse.

1.7 Structure of the Dissertation

The plan is as follows. The dissertation has two parts: in the first part, which comprises Chapters 2 and 3, I will examine the debate between Dispositionalism and Categoricalism; in the second part, which comprises Chapters 4 through 6, I will elaborate my own account, and defend the thesis that all fundamental properties are powerful qualities.

In Chapter 2, I will present an overview of Dispositionalism and Categoricalism. In this chapter, I will offer an overview of these views. I will also discuss what is at stake with the distinction between dispositional and qualitative properties. I will argue, however, that the canonical distinction is ill-conceived. The discussion will lay out the ground for introducing the powerful qualities view as a promising alternative to Dispositionalism and Categoricalism.

In Chapter 3, I will characterise the powerful qualities view. To accomplish this aim, I will introduce the novel notion of an aspect, which will play a crucial role in the remainder of the dissertation. I will then discuss the Identity Theory of powers, which is the standard version of the powerful qualities view. As its name suggests, the Identity Theory holds a distinctive identity claim between a property's dispositionality and its qualitativity. In the literature, the Identity Theory faces the charge of contradiction. This is because the qualitative and the dispositional are, on a canonical understanding, mutually exclusive. In order to free the Identity Theory from the contradiction objection, I will propose a distinction between two senses of the notions of dispositionality and qualitativity. I will argue that such a distinction allows us to reformulate the identity claim in a three plausible, non-contradictory ways. However, I will also offer some consideration against each of the proposed interpretations. We should therefore explore an approach that does away with the identity claim.

In Chapter 4, I will articulate a more promising account of powerful qualities that is not committed to the identity between the dispositional and the qualitative. In this chapter, the original notion of an *aspect* will play a central role in developing an alternative account of powerful qualities. I shall call the proposed view “Dual-Aspect Account”. I will then discuss a comparison between the Dual-Aspect Account and the Identity Theory.

The introduction of aspects in our ontology complicates the framework. But this is cost that is worth paying because of the theoretical benefits that aspects bring us. I will discuss some of these merits in Chapter 5, where I will focus on the topic of resemblance. I will argue that an aspect view of properties such as the Dual-Aspect Account has two important advantages. First, it is able to accommodate a greater variety of resemblances. Second, it allows us to specify in a precise way the conditions for resemblance among properties. To make my case, I will discuss a comparison between the Dual-Aspect Account and the Identity Theory. To emphasise its merits, I will also compare the Dual-Aspect Account with David Armstrong’s theory of Partial Identity, which differs greatly from the Identity Theory.

In Chapter 6, I will eventually concentrate on the thesis that all fundamental properties are powerful qualities. I will begin by discussing three arguments in favour of this thesis. After that, I will move to assess the resulting “big picture” world-view that emerges from the perspective of the Dual-Aspect Account. As a test case, I will focus on the question of consciousness and its place in nature. It is an undeniable fact of our world that some beings are conscious. Every theory of fundamental properties that aspires to account for everything that exists faces the challenge of accommodating the fact that some entities have the property of being conscious while others do not. The immediate question is whether the property of being conscious is fundamental. A negative answer to this question paves the way to a broadly physicalist outlook. The challenge is explaining how some fundamental physical properties are related with the property of being conscious. By contrast, a positive answer leads to a view in the vicinity of panpsychism, the doctrine that at least some fundamental properties are, in a sense to be explained, mental. The challenge for this view is to elucidate the sense in which some fundamental physical properties may be conscious. I shall discuss these two strategies from the viewpoint of the powerful qualities view. In particular, I will argue that the Dual-Aspect Account makes a version of panpsychism more attractive than it is usually thought of. This is a point in favour of its applicability. I will conclude this chapter by pointing out future works that need to be done in light of the proposed conception of powerful qualities.

CHAPTER 2

THE CATEGORICAL–DISPOSITIONAL DISTINCTION

I suggest that everything which possesses any power of any kind, either to produce a change in anything of any nature or to be affected even in the least degree by the slightest cause though it be only on one occasion, has real being. For I set up as a definition which defines the things that are, that it is nothing else than power. (Plato, *Sophist* 247d-e)

[...] Properties do nothing to capture the causal powers of things. (Lewis 1983, 346)

2.1 The Importance of the Dispute

2.1.1 A Preliminary Characterisation

Many philosophical problems arise from everyday talk and thought. Questions about what is right and wrong, what constitutes knowledge, and what it is like to be conscious are just a few examples. Yet talk of fundamental properties is not common sense practice. Why should we undertake a philosophical investigation of the most adequate conception of fundamental properties?

Here is my reply. Properties are a pervasive feature of the reality that we inhabit. Everything that exists is in some way or other. These ways are properties. We make sense of the world as we find it in everyday experience and scientific theorising by invoking properties. We handle glassware with care because of its fragility. We describe the behaviour of particles in terms of charges and masses. We discriminate similarities and dissimilarities among things with respect to their properties. Black cats resemble each other with respect to their colour, but they might differ with respect to their shape. Electrons and muons have the same charge, but they differ with respect to their mass. And so on.

We have an overwhelming sense that some properties are more basic than others. At least intuitively, mass, charge and spin are more basic than being a member of the Parliament, being grue, and being a Golden Retriever. The interest in fundamental properties reflects such an intuition: once we acknowledge that some properties are more basic than others, it is natural to wonder what the most basic ones are. But investigating a conception of fundamental properties is not the mere satisfaction of a philosophical curiosity. As I will explain in this chapter, the decision between competing views of fundamental properties

leads to clashing pictures of the world and its laws of nature. The present enquiry is therefore relevant for both philosophy and science.

The aim of this dissertation is to answer two questions: (1) What is the most adequate conception of fundamental properties? (2) What is the “big picture” world-view that we get according to such a conception?

It goes without saying that an answer to (2) presupposes an answer to (1). I shall postpone the discussion of (2) to Chapter 6. In this chapter and the following ones, I shall concentrate on (1). It is useful to begin the investigation by illustrating the best options on the table. In order to do so, we need to introduce a recognised distinction between two dominant conceptions of fundamental properties: dispositional and categorical.

Dispositional properties essentially empower their bearers. The nature of these properties is characterized dispositionally (Bird 2007a, 45): to be a dispositional property, or power is to essentially dispose a bearer to bring about some effects in appropriate circumstances. These effects are the so-called manifestations. A classic example of a dispositional property is charge. By being negatively charged, a particle is essentially disposed to exert and experience an electric force when it interacts with other negatively charged particles. This is a circumstance in which negative charge is manifested.

Categorical properties are essentially qualitative. Metaphysical orthodoxy maintains that qualitativity is a matter of how a thing is like rather than what that thing would do in certain circumstances. Canonically, categorical properties do not essentially empower their bearers (Armstrong 1997, 80): the nature, or essence of categorical properties is not dispositional. Albeit contentious, examples of categorical properties are size, shape and occupying a certain location. For example, being trilateral does not appear to dispose a triangle to bring about any characteristic effect in some characteristic circumstance. Rather it is a matter of how a triangle is occurrently like. More needs to be said about the distinction between dispositional and categorical properties. I will fulfil this task in this chapter. However, such a preliminary characterisation suffices for grasping the relevance of what is at stake with these two conceptions.

Call *Dispositionalism* the view that all fundamental properties are essentially dispositional, or powers. Call *Categoricalism* the view that all fundamental properties are essentially qualitative, or qualities. This chapter is devoted to illustrate these views and what is at stake with the decision between them. The plan is as follows. In the remainder of §2.1 I will motivate the importance of the categorical–dispositional distinction. I will then offer a detailed overview of Dispositionalism and Categoricalism in §2.2 and §2.3 respectively. In these sections, I will discuss some standard objections against each of these views. Lastly,

in §2.4, I will discuss some reasons for rejecting an ontologically robust distinction between categorical and dispositional properties. On some popular conceptions, the distinction neglects an important feature of dispositional properties. Consequently, it fails to demarcate a real difference between kinds of property. This discussion will lay the groundwork for the following chapters.

2.1.2 *What Is At Stake*

The categorical–dispositional distinction is worthy of attention for two main reasons. The first regards its implications; the second concerns the motivations for endorsing it. The distinction between categorical and dispositional properties have serious consequences. It is not just a matter of conceiving of properties in different ways. The views that incarnate these conceptions, respectively Categoricalism and Dispositionalism, come with a cluster of heavyweight commitments. As a result, the decision between these two views leads to opposing picture of the world and its laws of nature.

To some extent, the categorical–dispositional distinction mirrors the clash between the manifest and the scientific images of the world (Sellars 1963). Our world, as experienced in everyday life, comprises a sundry array of qualities. Objects have shape, colours, and smells. Qualities of objects are ostensibly *wholly present* when we perceive them (Ingthorsson 2013). We can grasp adequately qualities such as colour and shape in non-dispositional terms. In contrast, the scientific image of the world abounds with dispositional properties. Charge is the disposition to produce an electromagnetic force, gravitational mass is the disposition to generate a gravitational force, and fragility is the disposition to shatter, and so on. It seems that apprehending these properties only in non-dispositional terms fails to capture something important about their possession: namely, that by having these properties, things are disposed to manifest distinctive effects in appropriate circumstances.

The clash can be stressed further. Physics is said to produce the best theories of our world. But physical entities are characterised in terms of how they are disposed to affect other physical entities and measuring devices in certain conditions (Eddington 1928; Russell 1921; 1927). The manifest qualities we ordinarily perceive do not appear in physical theory. Nor are they mentioned among the fundamental forces responsible for the workings of the universe. Yet experience teaches us that things do have qualities.

The question of whether all fundamental properties are qualitative or dispositional is a substantive one. Of course, there is room for disagreement. For example, it is unclear whether positional properties such as that of being located at a certain position in space-time are qualities or powers. But despite opposing views, categoricalists and dispositionalists

seemingly agree that qualities and powers are mutually exclusive. For example, David Armstrong, who is a leading advocate of Categoricalism, says:

The Categoricalist goes to the other extreme [with respect to the dispositionalist]. All true properties [...] are non-dispositional. [Categorical] properties are self-contained things, keeping themselves, not point beyond themselves to further effects brought about in virtue of such properties. (Armstrong 1997, 80)

In same vein, Alexander Bird, who champions Dispositionalism, says:

What we mean by ‘categorical’ must be understood in negative terms. That is, a categorical property does not confer of necessity any power or disposition. [...] To say that a property is categorical is to deny that it is necessarily dispositional. (Bird 2007a, 66–67)

Perhaps, the clearest example of the mutual exclusivity of categorical and dispositional property has been offered by Brian Ellis, who writes:

Categorical properties are thought of as properties that things may have independently of how they may be disposed to behave: they are considered to be essentially non-dispositional. Dispositions [dispositional properties], on the other hand, are supposed to be essentially dependent on how things are disposed to behave in various possible circumstances. (Ellis 2002, 68)

On such a conception, the mutual exclusivity of the categorical and the dispositional is evident: a fundamental property is either essentially dispositional or it is not. But if we endorse it, we are forced to decide between categorical and dispositional properties; between the manifest picture and the scientific one. Whatever option we prefer, the resulting view faces some difficult challenges.

A world of fundamental powers appears to be in tension with the qualities experienced in ordinary life. Here we face the challenging task of accommodating qualities in our ontology. In contrast, a world of fundamental qualities is seemingly inadequate for capturing the causal happenings that occur in the natural world. Here the challenge is to accommodate the workings of nature without invoking dispositional properties. As it will become clear in the coming sections, there are various ways to address these challenges. At

this stage, however, it suffices to note that the distinction between dispositional and categorical properties comes with two opposing views of the world: one that the world is fundamentally powerful; the other denies it.

2.1.3 Humean vs. Anti-Humean Metaphysics

The implications of the choice between Categoricalism and Dispositionalism run deeper. In contemporary metaphysics, there are two dominant world-views: one is Humean, the other is anti-Humean. Traditionally, Categoricalism is Humean. In contrast, Dispositionalism is typically anti-Humean. The adoption of either Categoricalism or Dispositionalism implies taking a stand with respect to the Humean outlook.

The “Humeanism vs. Anti-Humeanism” debate revolves around the question of whether our world is a *Hume world* or not (Bigelow and Pargetter 1990, 279–281; Ellis 2001, 45–47). A Hume world has two distinctive features: (i) it is a world where there are no causal links between its properties; (ii) there are no necessary connections among properties.

Proponents of the Hume world believe that there is a neat distinction between how things are and what they are disposed to do. How things are depends on their qualities. What things are disposed to do depends on laws of nature. Crucially, a change in the laws of nature would affect the power-profile of things.

One of the loci classici for a depiction of the Hume world is a famous passage from David Lewis:

Humean supervenience is named in honor of the greater [sic] denier of necessary connections. It is the doctrine that all there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another. (But it is no part of the thesis that these local matters of fact are mental.) We have geometry: a system of external relations of spatio-temporal distance between points. Maybe points of spacetime itself, maybe point-sized bits of matter or aether fields, maybe both. And at those points we have local qualities: perfectly natural intrinsic properties which need nothing bigger than a point at which to be instantiated. For short: we have an arrangement of qualities. And that is all. All else supervenes on that. (Lewis 1986b, x)

For present purposes, we can ignore thesis of Humean Supervenience. Lewis’s passage is relevant for it links the Hume world with Categoricalism: each tile of the vast mosaic is a fundamental categorical property, or quality.

In the Hume world, every fundamental quality is an essentially self-contained property that does not necessarily dispose a bearer to bring about any manifestation in any specific circumstance. Charge, for example, would not empower a particle to experience and exert an electric force by virtue of its nature in a Hume world. The connection between charge and the property of exerting and experiencing an electric force would obtain in virtue of some law of nature.

The categoricalist typically believes that our world is a Hume world; the dispositionalist denies it. For example, Ellis, who endorses a mixed view of powers and qualities, urges to adopt a view that takes the world to be “essentially active,” in which “all things have causal powers and are therefore agents of one kind or another” (Ellis 2002, 141). More or less tacitly, the dispositionalist endorses this idea.

The metaphor of the mosaic is useful to emphasise the contrast between Dispositionalism and Categoricalism. From the viewpoint of Dispositionalism, the tiles are dispositional properties which essentially empower their bearers in various ways. As a consequence, there are necessary connections between the possession of dispositional properties and what bearers are disposed to do by virtue of having them. The clash with Categoricalism is striking: the dispositionalist admits necessary connections; the categoricalist denies it. Note that this is different from claiming that dispositional properties manifest their effects with some kind of modal force. Dispositionalists endorse this idea, but disagree on the modality in question (cf. Mumford and Anjum 2011; Marmodoro 2016). Here I shall not explore this issue.

The question of whether our world is a Hume world is one of the key battlegrounds in contemporary metaphysics. However, the answer does not seem to depend entirely on armchair’s speculations. For example, the empirical adequacy of the Hume world is questioned by physics (Butterfield 2006; Maudlin 2007). Yet both categoricalists and dispositionalists agree that favouring one view or the other implies taking a stand on whether our world is a Hume world or not.

2.1.4 *Laws of Nature*

At stake with Categoricalism and Dispositionalism, there are two opposing conceptions of laws of nature. Our world appears to present regularities. This allows us to make predictions which for most practical purposes are reliable. Examples of regularities are not hard to find. In usual circumstances, water boils at a certain temperature; cats produce offspring of the same species; and the gravitational attraction of objects is a function of their

mass and distance. At first approximation, laws of nature can be understood as generalizations from regularities.

Laws of nature play a crucial role in scientific theorising. They account for the natural happenings in our world. The categoricalist and the dispositionalist disagree about how we ought to conceive of laws of nature and their role. It is not possible to explore in details the topic of laws of nature for it would divert us from the purposes of this chapter. For the purposes of this chapter, a general overview will suffice (for a more informative discussion, see Armstrong 1983; Carroll 1994; Bird 2007a; Lange 2009; Mumford 2004).

From the viewpoint of Categoricalism, laws are nomic connections holding among categorical properties (Armstrong 1978b, 129–130; 1989b, 75–107; 1997, 223–230). These nomic connections have two distinctive features: first, they are metaphysically contingent; second, it is in virtue of an obtaining nomic connection that certain properties but not others appear in a law of nature.

Following David Armstrong, who advocates the idea that laws of nature are metaphysically contingent, we can think of a law as a relation between two qualities. For example, suppose that L relates qualities F and G. On this view, L entails that everything that has F has also G. A merit of this approach is its explanatory force. The law L gives us a ground for the observation that all Fs are Gs. Namely, we can argue that all Fs are Gs *because* L obtains. Crucially, on this view, L is metaphysically contingent. It is therefore possible that L could have related F with another quality.

Standardly, the dispositionalist embraces an opposing view: (i) laws of nature are held to be, in some sense, necessary; and (ii) it is the nature of properties that determines which laws obtain (Bird 2007a, 43–48; Ellis 2001, 206). Laws of nature reflect, as it were, the dispositional nature of properties. For example, on this view, the Coulomb's Law reflects the nature of charge, which is to bestow upon its bearers the disposition to exert and experience an electric force.

Recall that properties, on Dispositionalism, are essentially dispositional. In every possible world, a dispositional property empowers a bearer in the same way. The law that describes its dispositional nature would be the same in every possible world. Thus if laws reflect the dispositional nature of properties, then these are necessary.

One might wonder if the dispositionalist view of laws is indeed plausible. Many properties such as charge and mass appear in different laws of nature (cf. Bird 2017). Does it mean that charge and mass have many dispositional natures? Here dispositionalists disagree. The answer depends on how one think of powers. I shall return to this issue in §2.2, where I will present in more detail the metaphysics of powers.

2.1.5 *Quidditism*

By favouring either Categoricalism or Dispositionalism, we respectively embrace or reject a peculiar view about property identities. This view is known as “Quidditism”. It is widely accepted that Quidditism is a substantive metaphysical thesis. However, there are a number of diverse views under its banner. It is therefore important to clarify which one is under scrutiny.

Quidditism stands to properties as Haeccectism stands to individuals. As I shall understand it, Haeccectism is the doctrine that the identity of individuals across possible worlds does not supervene on their qualitative features (Lewis 1986a, 220). On Haeccectism, Mary, who has a certain height and weight in our world, is the same individual in a world where her height and weight are different. Quidditism can be understood as the view the property identities across possible worlds do not supervene on their dispositional features. Let us stipulate that “dispositional features” is a shorthand for the nomic roles that properties play or, more generally, the dispositions associated with their possession.

A consequence of Quidditism is that a property preserves its identity in possible worlds where it has different dispositional features. For example, charge is one and the same property in possible worlds where it does something different from disposing to generate an electromagnetic force. This formulation of Quidditism as a view about property identities is often attributed to Robert Black (2000). So let us call this view *Black’s Quidditism*.

Categoricalism embraces Black’s Quidditism. By contrast, Dispositionalism does not permit it. I shall discuss Black’s Quidditism in more detail in §2.3.4 and §2.3.5. Here it suffices to note that at stake with the categorical–dispositional distinction there are opposing views about what determines the identity of property. To illustrate the opposition, let us consider an example. Think of charge as the property associated with the disposition to produce a force in accordance to Coulomb’s Law. Categoricalists are committed to two claims: (i) charge is only contingently associated with that disposition; (ii) such a disposition does not determine the identity of charge. The categoricalist believes that charge is one and the same properties in possible worlds where it has different dispositional features. For example, charge would be the same property in possible worlds where it disposes objects to evaporate. This view amounts to Black’s Quidditism.

The dispositionalist blocks Black’s Quidditism for she maintains that a property is identified with its dispositional features. For example, charge *is* the property of disposing a bearer to produce a force in accordance to Coulomb’s Law. So in a possible world where charge disposes a bearer to do something else, that property is a different one.

Before moving on, a short but important digression is needed. We ought to distinguish Black's Quidditism from doctrines that hold that there are *quiddities*. This is because Black's Quidditism does not entail the existence of quiddities. Thus one can endorse Black's Quidditism while denying the existence of quiddities.

It is hard to tell what quiddities are. David Chalmers proposes a distinction between two conceptions (2012, 347–353). On a *thin conception*, the quiddity of a property P is what makes P numerically distinct from every other property. This seems to be the view that Armstrong (1997) and Lewis (2009) endorse. On a *thick conception*, the quiddity of a property P is what makes P having a “substantial nature of some sort” and being numerically distinct from every other property (Chalmers 2012, 350). This appears to be the view embraced by early Armstrong (1989a). In light of Chalmers's distinction, we can distinguish between *Thin Quidditism* and *Thick Quidditism*. Thin Quidditism is the view that at least some properties have a thin quiddity; Thick Quidditism is the view that at least some properties have a thick quiddity. Once again, it is worth noting that Black's Quidditism entails neither Thin Quidditism nor Thick Quidditism. So the categoricist who embraces Black's Quidditism is not necessarily committed to the existence of thin or thick quiddities. Such a commitment rests on independent factors (cf. Smith 2016).

Some philosophers, however, do conceive of qualities as quiddities. For example, this seems to be the view held by Chalmers (2012, 347–351) and Heil (2012). Other ones appear to think of quiddities as higher-order properties of qualities. In my understanding, this is the view that early Armstrong (1989a) favours. Both views appear to be problematic if understood in accordance with a thick conception.

Thick quiddities raise a number of epistemic concerns. Our knowledge of properties is confined to their dispositional features. What we know about of properties is restricted to the way they contribute to the manifestable behaviour of their bearers. If qualities *are* thick quiddities, then their nature is distinct from their dispositional features. But we would not have access to it. This view appears to make us irremediably ignorant about the nature of qualities. While not everyone thinks of this as an implausible consequence (e.g. Lewis 2009), an alternative view is preferable. It is also unclear why positing thick quiddities in the first place. Our knowledge about the world does not seem to require them (Hawthorne 2001). It would be methodologically parsimonious to adopt a view that fits such a fact. I leave the task of motivating the admission of these entities to the friend of thick quiddities.

The view that quiddities, thin or thick, are higher-order properties is not exempt from problems either. One might wonder what the relation between a property and its quiddity is. Similarly one might ask whether quiddities constitute an addition to being with respect to

their properties. These are difficult questions. Fortunately, not every categoricist must address them. Categoricalism is sometimes accused of implausibility due to its commitment to quiddities. But this accusation demands caution as Categoricalism does not entail the existence of quiddities, whether thin or thick. To repeat, Categoricalism only embraces Black's Quidditism, which is a view about property identities.

So far I presented an overview of what is at stake with the categorical–dispositional distinction. Now I will turn to illustrate Categoricalism and Dispositionalism in more detail. Since qualitative properties are usually characterised in opposing terms to dispositional ones, it is useful to begin with Dispositionalism.

2.2 Pure Powers Views of Properties

2.2.1 *Fundamentally Powerful*

Dispositionalism is committed to the thesis that all fundamental properties are essentially dispositional, or powers. In similar vein, Alexander Bird characterises it as the view that “fundamental natural properties have an essentially dispositional character” (2007a, 9).

The dispositionalist holds that the world that we inhabit and the entities it contains are fundamentally powerful. The laws of nature reflect the powers of things: the Coulomb's Law captures the power to exert and experience an electric force that every charged particle has, Newton's Law of gravitation captures the power to produce a gravitational force that every massive particular has. And so on and so forth. The dispositionalist individuates and identifies fundamental properties with what they are power for. For example, from the viewpoint of Dispositionalism, charge *is* the power to produce an electric force, and gravitational mass *is* the power to produce a gravitational force.¹

Two significant motivations sustain Dispositionalism: one concerns scientific theorising, the other has to do with the clash between Humeanism and Anti-Humeanism (§2.2.4).²

Let us begin with the first motivation. It is widely held that the properties posited by physical theory are dispositional in character (Ellis 2002, 47; Mumford 2006, 476–477). Charge can be regarded the disposition to produce an electromagnetic force, gravitational

¹ For simplicity's sake, I will ignore some complications related to the fact that charge and mass are presumably determinable properties.

² A conception of properties as powers is said to offer a novel insights with respect to a number of philosophical topics such as causation, modality, agency, and perception. Of course, these applications makes it more attractive. However, they do not require a commitment to the view that all fundamental properties are powers.

mass can be regarded as the disposition to generate a gravitational force, and so on. The adoption of Dispositionalism gives us an ontological ground for explaining why certain physical properties, and in particular putative fundamental ones, are dispositional in character (Ellis 2001, 145–150; Chakravartty 2007, 119–126). On Dispositionalism, charge disposes to produce an electromagnetic force *because* its nature is to bestow upon bearers that disposition. That is, disposing to produce an electromagnetic force is what charge *does*. On Dispositionalism, what a property does determines what it is. Accordingly, charge *is* the property of disposing bearer to produce an electromagnetic force. The same goes for every other power. As I will explain in the next section, a power can dispose a bearer to do more things. It is therefore more accurate to say that every disposition that a power bestows upon a bearer partially determines its identity. The merit of Dispositionalism is to give us a straightforward answer to a question such as “Why does charge dispose to produce an electromagnetic force?” The answer is “Because charge *is* the property of disposing to produce an electromagnetic force”.

The second motivation that underlies Dispositionalism is its opposition to the Humean outlook. Dispositionalism is a natural ally for the anti-Humean. In fact, it imposes severe constraints on the contingency in nature: properties and their dispositional features cannot swap freely. If it is a nature of a power to bestow upon a bearer a certain disposition, then this is so in every possible world. Against the humean, the dispositionalist accepts the existence of necessary connections in nature (§2.2.4).

In what follows I will discuss the question of how to formulate Dispositionalism in a more precise way. I will then consider some traditional objections against it. The aim of this section is to offer a precise answer to the question: what is for a property to a power? Before proceeding any further, I will lay out few preliminary remarks.

First, I will not discuss the ascription of dispositional predicates or concepts. My focus will be on what it is for a thing to have a dispositional property rather than the conditions for ascribing it a disposition. An overview of the variety and flexibility of dispositional ascriptions can be found in Stephen Mumford’s seminal work *Dispositions* (1998).

Second, a note on the use of the term “essentially”. The locution is useful for illustrative purposes: it emphasises the contrast and, sometimes, incompatibility between Dispositionalism and its rivals. However, it has several interpretations. On some readings, to say that property is essentially dispositional means that it has a dispositional essence. This would suggest an ontologically heavyweight sense of the term which requires the commitment to essences. On a more liberal reading, to say that a property is essentially

dispositional does not commit us to essences as robust entities in addition to properties (cf. Lowe 2018). Dispositionalism understood according to the former interpretation is known as *Dispositional Essentialism* (cf. Bird 2007a; Yates 2013). Despite this ambiguity, I will use the term “essentially” to capture the idea that if a property P is essentially so-and-so, then P is so-and-so by virtue of its nature. As is customary, a consequence of this characterisation is that if P is essentially so-and-so, then necessarily P is so-and-so (Della Rocca 1996; Fine 1994; Yates 2013). Thus if a property is essentially dispositional, then it necessarily bestows upon its bearers some disposition by virtue of its nature. I will not discuss further how to make sense of the essentiality of properties (see Yates 2015 for a more detailed overview). Unless specified, talk of essentiality should be understood in accordance with the liberal reading. The same goes for other views of properties that I will discuss in the following chapters.

2.2.2 *The Metaphysics of Powers*

Dispositionalism is the view that all fundamental properties are essentially dispositional, or powers. The immediate follow-up is: what is it for a property to be a power? The aim of this section is to answer this question.

The literature abounds with a variety of locutions that pick out the notion of a dispositional property. Here are a few examples: “power”, “disposition”, “capacity”, “ability”, “propensity”, “tendency”, and “potential”. Such locutions carry subtle nuances, but refer to a conception of properties with distinctive basic features. I shall restrict the idiom to “power” and assume that we can safely neglect the subtle differences carried by other locutions.

At first blush, powers are *powers to do something in some circumstance*. When a power is actually doing that something, it is manifested (or exercised or exerted). That “something” is the so-called “manifestation”. There is no consensus on how to conceive of the manifestations of powers. On some views, the manifestations of a power are kinds of effects or outcomes brought about in some circumstances (e.g. Mumford and Anjum 2011). On other views, the manifestations are the occurrence of certain kinds of properties (Bird 2007a; Marmodoro 2010). On further others, they seem to be the obtaining of certain kinds of events or states of affairs (e.g. Molnar 2003). My aim in this chapter is to offer a general overview of Dispositionalism. As such, I will not fix on a specific view about manifestations. In what follows I will use the colloquial expression “to bring about a manifestation” as a placeholder: how this expression is to be understood more precisely depends on the conception of manifestations that one has in mind.

According to the dispositionalist, a paradigmatic example of a power is charge. From the viewpoint of Dispositionalism, charge can be regarded as the power to exert and experience an electric force in some circumstances, for example, when a charged particle interacts with other charged particles. When this happens, the charged particle's power is manifested, namely there is a manifestation of electric force. Another example is fragility, the power to shatter. A fragile vase manifests its power when someone strikes it, for example. As noted by Bird (2016), the question of how fundamental, micro-powers (e.g. charge) and non-fundamental macro-powers (e.g. fragility) are related has received little attention among dispositionalists. Since my focus is on fundamental properties, I will neglect this question. Occasionally, I will mention some macro-powers for illustrative purposes only. Recall that Dispositionalism is a thesis about the nature of fundamental properties. The view that all fundamental and non-fundamental properties are powers is a stronger view which is called *Pandispositionalism* (Mumford and Anjum 2011).

From this initial characterisation, we can say that dispositional properties are powers directed to a distinctive manifestation. The possession of a power bestows upon a bearer a disposition, which manifestation can be brought about in an appropriate circumstance. More precisely, we can formulate the notion of a dispositional property as follows.

Dispositional Property: a property P is dispositional if and only if there is at least a manifestation M and there is at least a circumstance C such that for every particular x that has P, were x in C, x would bring about M.

According to *Dispositional Property*, if charge is a power and its manifestation is the production of electric force, then there is a circumstance such that if a charged thing were to undergo it, then it would produce electric force. This seems quite right: when a charged particle interacts with other charged particles, it does exert electric force. The interaction with other charged particles is an appropriate circumstance for the manifestation of charge.

Dispositionalism can be understood as the view that the nature of every fundamental property is characterised by *Dispositional Property* or something akin. There is an important reason for formulating the notion of a dispositional property in counterfactual terms: a power may never manifest. For example, a charged particle has the disposition to exert and experience electric force independently from whether or not it will ever do so. It is important to differentiate this question from the one of whether some powers are constantly manifested. Anna Marmodoro (2017, 58–62) and John Heil (2017, 96) suggest that most powers, in particular fundamental ones, are constantly manifesting. But a change in the circumstance

would interrupt even a constantly manifesting power. To put it differently, even a constantly manifesting power may exist unmanifested.

In a posthumous work, George Molnar (2003) identifies five *basic* features of powers, which are listed below as (a)-(e). Orthodoxy's view of Dispositionalism endorses (a)-(c). In contrast, (d)-(e) are more controversial. In addition, I shall consider two additional features (g)-(h) which ought to be considered by any serious powers theorist.

(a) *Directedness*

Directedness captures the link between a power and its manifestation. According to Molnar, *Directedness* is an "essential feature" of dispositional properties (2003, 60). Each power is "directed" or "oriented" towards a distinctive manifestation. For example, gravitational mass is directed toward the production of gravitational force, charge is directed toward the production of electric force, and so on. *Directedness* gives us a criterion for discriminating between powers and non-powers: powers are essentially directed toward a certain manifestation; in contrast, non-powers are not. There is no consensus on how to specify the relation of *Directedness* and what its relata are (cf. Bird 2007a, 105–114; Tugby 2013). For the purposes of this chapter, we can avoid discussing this issue.

(b) *Independence*

The second basic feature of powers is what Molnar calls *Independence* (Molnar 2003, 82–83). It conveys the idea that powers are ontologically independent from their manifestation. Given *Independence*, a token of charge, for example, can exist without producing an electric force (its manifestation); a vase can have the power to shatter even if it will never do so, and so on. The existence of unmanifested powers is the source of puzzlement. It raises epistemic worries which are the target of traditional objections against Dispositionalism. I shall discuss them §2.2.3.

(c) *Actuality*

The third basic feature is *Actuality*. It expresses the idea that to possess a power is, for something, to have an actual property (Molnar 2003, 99-101). Powers are therefore occurrent features of their bearers. What is not needed to be actual is their

manifestation. The charge of an electron, for example, is one of its actual properties whether or not that electron is actually manifesting electric force. The commitment to *Actuality* is meant to oppose a conception of powers as hypothetical properties (e.g. Ryle 1949). According to such a view, powers are properties that things have just in case a particular condition occurs. But this is not what the dispositionalist has in mind: powers are not conditional properties; a thing has its powers unconditionally—powers have the feature of being actual properties of their bearers.

The features of *Directedness*, *Independence*, and *Actuality* are widely recognised as the basic, or essential features of powers. However, Molnar's list includes two other features: *Intrinsicality* and *Objectivity*. Whether these features should be taken as essential is a controversial matter. As I will explain, it seems that a conception of fundamental properties as powers does not require them.

(d) *Intrinsicality*

According to Molnar, powers “*seem* intrinsic characteristic of their bearers” (2003, 102; original italic). How to spell out the notion of intrinsicality more precisely is notoriously a difficult matter. Molnar proposes the following definition:

F is an intrinsic property of *a* if and only if *a*'s having the property F is ontologically independent of the existence, and the non-existence, of any contingent *b* such that *a* is wholly distinct from *b*; and *a*'s not having the property F is ontologically independent from the existence, and the non-existence, of any contingent *b* such that *a* is wholly distinct from *b*. (Molnar 2003, 39–40)

What motivates *Intrinsicality* is the aversion to the idea that powers are relational properties. Given *Actuality* and *Independence*, a relational conception of powers is problematic with respect to the possibility of unmanifested powers. It seems to commit us to the existence of a relation between something actual (a power) and something non-actual (its manifestation). While there are ways to address this concern (e.g. Bird 2007a, 105–114; Tugby 2013), a relational view of powers is conceptually unattractive.

There are, however, two more serious reasons for not taking *Intrinsicality* as an essential feature of powers: (i) it seems that being intrinsic is not a necessary condition

of a property for being a power; (ii) *Intrinsicity* appears to be empirically inadequate to capture putative fundamental physical powers.

It is reasonable to suppose that Molnar's features, by virtue of being essential to powers, are also necessary. Thus *Intrinsicity* would be a necessary feature of a power. But this does not seem quite right. It is in fact possible that some powers are extrinsic (McKittrick 2003; Bauer 2011). A thing may have some powers that depend on the existence of other things. An electromagnet, for example, has the power to produce a magnetic force by virtue of an electric current. The power disappears as the electric current ceases.

If we take Molnar's features to be necessary, then it seems that *Directedness*, *Independence*, and *Actuality* are jointly sufficient for a property to be a power. *Directedness* captures the ideas that powerful properties dispose their bearers toward some manifestation. *Independence* captures the fact that not every power is constantly manifested. Lastly, *Actuality* removes the charge of lack of reality: powers are occurrent properties of their bearers.

Now let us consider the other worry. Dispositionalism aims to offer an ontological ground for the properties invoked by science and, in particular, the fundamental physical ones. It is unclear why we should rule out from the armchair the possibility that some powers are extrinsic. For all we currently know, empirical evidence favours the view that fundamental physical properties are extrinsic (Butterfield 2006; Esfeld 2010). For instance, on some views, mass and charge are dependent on the existence on certain fields. The dispositionalist is better off by accepting that some powers are extrinsic. It would be at least unfortunate if the empirical adequacy of Dispositionalism were to be undermined by the insistence on *Intrinsicity*.

(e) *Objectivity*

The last feature of Molnar's list is *Objectivity*. It expresses the idea that powers are mind-independent properties (Molnar 2003, 112). What motivates *Objectivity* is the opposition to a "projectivist" view according to which powers are imposed into the world by the observing mind. Arguably, a view of this sort is aligned with the spirit of

Humeanism (§2.1.3). Thus the commitment to *Objectivity* can be regarded as an expression of the spirit of Dispositionalism, which is typically anti-Humean.³

Like *Intrinsicity*, *Objectivity* does not seem to be a necessary feature of powers. A property can be a power without being objective. Significantly, it is beneficial to leave open the possibility that some powers are mind-dependent. For example, some form of idealism may be true and, therefore, fundamental physical properties could be in some sense mind-dependent. We do not need to abandon a conception of powers just because idealism or a view in its vicinity is true. Nor does Dispositionalism require us to rule out idealism. On a different topic, some power enthusiasts claim a conception of powers offers some philosophical insights with respect to mind-dependent phenomena such as free will or agency (e.g. Greco and Groff 2012; Mumford and Anjum 2015; Vihvelin 2004). We are not forced to delegitimize these approaches just because they violate *Objectivity*.

Molnar (2003) identifies *Directedness*, *Independence*, *Actuality*, *Intrinsicity*, and *Objectivity* as the five basic features of powers. If we consider these “basic features” in terms of necessary features of powers, then only *Directedness*, *Independence* and *Actuality* seem to deserve the label; *Intrinsicity* and *Objectivity* ought not to be treated as such.

There are two additional features (f)-(g) which are worthy of consideration. As for *Intrinsicity* and *Objectivity*, their status is contentious. Yet power views usually take a stand on each of them. So the resulting list of features (a)-(g) gives us a general characterisation of what a power is.

(f) *Reciprocity*

The first additional feature can be called *Reciprocity*. It captures the idea that the manifestation of a power occurs in concert, so to speak, with the manifestation of others powers. On this model, powers manifest when matched with their “reciprocal disposition partner” (Martin 1993; Martin and Heil 1999; Heil 2005, 350). For

³ Physical powers are traditionally conceived of as mind-independent properties of objects. However, this commitment demands caution with respect to the *dynamic* properties subatomic fundamental particles (spin direction, momentum, and position). According to some interpretations of quantum mechanics, the values of such properties is observation-dependent. If these properties were powers, then it is unclear whether they can be regarded as mind-independent. This case suggests that *Objectivity* cannot be applied unrestrictedly to all physical powers. The dispositionalist who thinks that the dynamic properties of fundamental particles are powers must to be prepared to accommodate observational-dependence (and consequently the mind-dependence) as a feature of some fundamental properties of the universe. The philosophical implications of this view are left to speculation.

example, consider the solubility in water of salt crystals, which can be understood as the salt crystals' power to dissolve in water. The dissolving manifestation seems to be the product of the concurrent manifestation of the water's power to dissolve crystal salts. Those who advocate *Reciprocity* (e.g. Martin 1993; Heil 2003; Mumford and Anjum 2011) claim that the dissolving manifestation ought to be understood as the *mutual manifestation* of two distinct powers: the salt crystal's power to dissolve in water and water's power to dissolve salt crystals.

There is no consensus on whether the mutual manifestation model can adequately account for the effects that powers bring about (Austin 2016; Anjum and Mumford 2017). It suffices to note that it opposes the traditional stimulus-response model, according to which a power is manifested only when the appropriate stimulus triggers its manifestation (cf. Bird 2007a). For example, the shattering manifestation of a fragile vase occurs when someone strikes it. The striking of the vase is the stimulus that triggers the shattering response. By contrast, on the mutual manifestation model, powers manifest when they match with their reciprocal disposition partners, which are themselves powers.

(g) "*Multi-track*"-ability

The second additional feature is what can be called "*Multi-track*"-ability. Multi-track powers have more than a single type of manifestation or can be manifested in more than a single type of circumstance. By contrast, *single-track* powers have only a single-type of manifestation in only a single type of circumstance. Someone who adopts a multi-track view of powers would say that mass has different manifestations. For example, one of its manifestations would be as an inertial force. Another one would be as a gravitational force. In contrast, the advocate of single-track powers would say that these two manifestations correspond to two different powers: inertial mass and gravitational mass.

The question is whether fundamental powers are multi-track. Plausibly, we could think of multi-track powers as conjunctions or disjunction of single-track powers (e.g. Bird 2007a, 21–24). However, Bird (2016, 358–360) notes that this strategy is problematic for conjunctions or disjunctions of powers are not always genuine powers. For powers P and Q it is not always the case that there is a circumstance in which $P \wedge Q$ can be manifested. In same vein, it is not always the case that there is a circumstance in which $P \vee Q$ can be manifested. Since *Directedness* is the mark of powers, if there is

no circumstance in which $P \wedge Q$ and $P \vee Q$ can be manifested, then $P \wedge Q$ and $P \vee Q$ are not powers. The question whether fundamental powers are multi-track remains. Here power theorists disagree (cf. Heil 2003; Bird 2007a).

The list (a)-(g) offers an overview of the general features of powers. I argued that only *Directedness*, *Independence*, and *Actuality* are good candidates for being essential, and therefore necessary, features of powers. Having clarified what a power is, let us consider some standard objections against Dispositionalism.

2.2.3 Finkish Dispositions

Powers are properties whose nature can be characterised dispositionally (Bird 2007a, 44–45). A way to make sense of this claim is to say that powers' nature can be analysed in counterfactual terms. A canonical analysis of dispositions is the so-called “conditional analysis” (CA for short). According to CA, a thing is disposed to manifest M in a circumstance C just in case were that thing in C, it would manifest M.

A traditional problem with CA is that the existence of “finkish dispositions”, or *finks* undermines its plausibility (Martin 1994). To understand the notion of a finkish disposition, we have to observe that in many cases the manifestation of a power does not occur instantaneously. It takes time for water to dissolve crystal salts. Likewise, from the perspective of special relativity, it takes time for the gravitational force of a massive particle to affect another one. And so forth. The time interval between the triggering of a power and its manifestation allows the possibility of preventing the manifestation. As Bird puts it, it “provides an opportunity for the disposition to go out of existence and so halt the process that would bring about the manifestation” (Bird 2007a, 25).

A power is finkish if it ceases to exist between the triggering and the occurrence of its manifestation. As a result, a finkish power's manifestation never takes place. However, a finkish power does have a manifestation that could be brought about. C.B. Martin illustrates the idea with the example of an electro-fink (1994, 2-4). This device can make an electric wire disposed to conduct a current when connected to a conductor. When the electric wire conducts a current is “live”, otherwise it is “dead”. The electro-fink has also another feature: it can detect whether the electric wire is connected to a conductor.

The peculiar function of the electro-fink is to make the wire “dead” every time is connected to a conductor. This case undermines CA. The wire *has* the disposition to conduct a current when connected to a generator. But the electro-fink prevents the manifestation of

the wire's disposition. Therefore, it is not the case that if the wire were to be connected to a conductor, it would conduct a current.

The possibility of finks and other manifestation “blockers” shows that CA is not the best guide for determining whether a thing has some powers. However, there are ways for improving CA. For example, it is possible to reform CA so that it is immune to finks (Bird 2007a, 31–41). Alternatively, one can argue that there are no blockers or finks at the fundamental level (Bird 2007a, 60–63). I will not explore these strategies here. Dispositionalism is a view about the nature of fundamental properties. The question of whether we can provide a satisfactory analysis of powers in counterfactual terms is a different topic. Therefore, the shortcomings of CA have little impact with respect to the tenability of Dispositionalism. At most, they show us that we should not characterise in counterfactual terms the nature of powers. But this does not represent a fatal threat for the thesis that all fundamental properties are powers.

2.2.4 *The Actuality Objection*

Another standard objection against Dispositionalism is that powers lack of enough reality. This charge is usually expressed with a regress objection which targets the idea that powers are *pure*.⁴ Here the notion of purity is informal: it captures the idea that a power is exhausted in the way it empowers a bearer. A pure power is *nothing but*, as John Heil puts it, “its contribution to the dispositionalities of its possessors” (2003, 97).

Suppose that all properties are pure powers. Suppose also that the manifestations of powers are properties of powers. On this view, the manifestation of a power P is a power P*. Since every power has a distinctive manifestation, also P* has it. In turn, P*'s manifestation is itself another power. And so on, ad infinitum. A vicious regress arises:

“If all properties and relations that are supposed to be real are causal powers, then their effects can only be characterized by their causal powers, and so on. So causal powers are never manifested. They just produce other causal powers in endless sequence.”
(Ellis 2002, 171)

“If a property is nothing but its capacity to enter into nomic relations to further properties, the same must be said of these further properties and so on indefinitely

⁴ Regress objections exist in many forms. Some of them target the identification and individuation of pure powers (e.g. Lowe 2010, 2012). Here I am focusing on regress objections that target the actuality of powers. See Bird (2007a, 131–138) for an overview of other regress objections.

unless we return in circle to the original property or properties.” (Armstrong 1983, 162)

On a pure powers view, it seems that powers never actualise their manifestations. Of course, this would be an implausible consequence of this view. As David Armstrong puts it:

“Particulars would seem to be always re-packing their bags as they change their properties, yet never taking a journey from potency to act.” (Armstrong 1997, 80)

Regress objections aim to elicit the shortcomings of an ontology of nothing but pure powers (for a more detailed discussion, see Bird 2007b). They do not affect views that accept the existence of non-powers (e.g. Ellis 2001) or non-pure powers (e.g. Heil 2003; Taylor 2018). For example, if one takes the manifestation to be a non-power, the regress is blocked. By contrast, if one does take the manifestation of a power to be a power, the regress seems to be inevitable (examples of these views are Marmodoro 2010 and Mumford and Anjum 2011).

The dispositionalist can resist the objection by arguing that there is more to the nature of a power than its powerfulness. As illustrated in §2.2.2, powers are held to possess a number of features. It is therefore possible to defuse the regress by pointing out a mischaracterisation of the notion of a power. It is worth noting, however, that if a power is more than the ways its possession empowers a bearer, then it is unclear how to understand its purity (cf. Taylor 2018). I will not discuss this issue for it would lead us astray with respect to the purposes of the chapter. However, I recognize that the label “pure power” is misleading. The dispositionalist should clarify whether or not the purity of powers play a relevant theoretical role. If not, then it is worth renouncing it for the sake of clarity.

A different strategy is to accept the regress but argue that it is beneficial. On certain views, such as that of Mumford’s and Anjum’s (2011), that the manifestation of a power is itself a power is a consequence of admitting nothing but powers in one’s ontology.

A more promising way to block regress objections is to consider the feature of *Actuality*: powers are actual properties of their bearers. The appeal to *Actuality* is sufficient to block Armstrong’s worry that powers, if they were nothing but potencies, would lack of enough reality. However, Armstrong is on the right track: the nature of power does involve a potency—namely, something that has the potential to be actualised. An unmanifested power has the potential to be manifested. Insofar the manifestation is not brought about, it

exists as a mere possibility or unrealized state of affairs (cf. Bird 2007a, 105–113). It therefore appears that Dispositionalism is committed to the existence of potencies.

The previous consequence raises a number of challenging questions that cannot be adequately addressed here. For example, the dispositionalist has to clarify how a power, which is an actual property, may involve something non-actual such as its potential manifestation. Relatedly, she has to clarify what kind of relation is better suited to capturing the link between an actual power and a non-actual manifestation. I will not explore possible answers to these questions for this will divert us significantly from the purposes of the chapter. Here the point is a different one: the potential nature of a power does not undermine its reality.

It is crucial to distinguish between different senses in which the term “actuality” is invoked by the dispositionalist. In one sense, the term “actuality” picks out a basic feature of powers. In this sense, the powers are actual, here-and-now properties of their bearers. In another sense, “actuality” is meant to distinguish between the actualised manifestation and the unactualised ones. The shattering of a vase is an actualised manifestation of fragility. The potential shattering of a vase that is yet to be struck by someone is an unactualised manifestation. It will not be surprising if the regress objections that target the actuality of powers hangs on the ambiguity of the term “actuality”.

It appears that the traditional objections based on the possibility of finkish dispositions and the actuality objection do not jeopardise Dispositionalism. What underlies these objections is perhaps a sense of suspicion with respect to the dispositionalist’s “big picture” world-view or a commitment to Humeanism. A view that confronts Dispositionalism on these very themes is Categoricalism. This makes it the standard opponent of Dispositionalism.

2.3 Pure Qualities Views of Properties

2.3.1 Categoricalism

Categoricalism is the view that all fundamental properties are essentially qualitative, or qualities (Armstrong 1997, 2010, 2012; Lewis 1986a; Mackie 1978; Prior and Jackson 1982; Prior, Pargetter and Jackson 1982; Prior 1985). At first approximation, qualitativity is a matter of how a thing is like rather than what a thing is disposed to do. In turn, how something is like is a matter of its occurrent or “categorical” features. For this reason, qualities are often called “categorical properties”.

It is surprisingly difficult to give an informative characterisation of what a quality is (cf. Ingthorsson 2013, Taylor 2018). This is perhaps due to the generality of the notion of qualitativity. In what follows I will attempt to identify the basic features of qualities.

Traditionally, qualitative properties are opposed to dispositional ones. Powers are essentially dispositional; in contrast, qualities are not. This conception warrants the incompatibility of Dispositionalism and Categoricalism. Either all fundamental properties are essentially dispositional or they are not.

The idea that qualities and powers are mutually exclusive is shared among advocates of both camps. For example, David Armstrong, a categoricist, says:

“All true properties [...] are non-dispositional. Properties are self-contained things, keeping themselves to themselves, not pointing beyond themselves to further effects brought about in virtue of such properties” (Armstrong 1997, 80)

David Lewis, another categoricist, denies “the thesis of essential nomological roles” of properties (1986a, 162–163). This is to say that properties, in Lewis’s view, do not essentially dispose their bearers in any way. In similar vein, Brian Ellis, who defends a dualist view of powers and qualities, says:

Categorical properties are thought of as properties that things may have independently of how they may be disposed to behave: they are considered to be essentially non-dispositional. (Ellis 2002, 68)

It is worth flagging that not everyone endorses the mutual exclusivity of powers and qualities. For example, John Heil thinks of qualities as merely actual properties of their bearers.

Qualities are categorical; qualities are here and now, actual, not merely potential, features of the objects of which they are qualities. (Heil 2012, 59)

The possibility of a conception of qualities in non-opposing terms to powers will play a central role in articulating a novel account of fundamental properties, which is the main aim of this dissertation. However, I will postpone this discussion to Chapter 3. In what follows I will present Categoricalism as traditionally understood, namely in opposition to Dispositionalism.

A conception of qualities as non-essentially dispositional properties has an important consequence. It allows the possibility that one and the same quality is associated with different dispositional features in different possible worlds. Accordingly, it is possible, for instance, that quality that in our world has the dispositional feature of charge role could have the dispositional feature of mass in another possible one. Let us use “dispositional features” as a convenient shorthand for the dispositions associated with the possession of a certain property.

The categoricalist is committed to a distinctive view of property identities. On this view, one and the same quality preserves its identity across possible worlds. To use the previous example, this is to say that the property of charge is the same even in worlds where it has the dispositional features of the mass. In §2.1.5 I called this view *Black’s Quidditism* (Black 2000), which I will discuss it in more detail in §2.3.3. Here it sufficient to note the clash with the characterisation of a power: “a categorical property does not confer of necessity any power or disposition. [...] To say that a property is categorical is to deny that it is necessarily dispositional” (Bird 2007a, 66–67).

Unlike powers, there are no paradigmatic examples of categorical properties. Locke’s *primary qualities* such as size, shape and motion are often mentioned as examples of qualities. However, these examples are controversial. The dispositionalist would argue that Locke’s primary qualities are powers to do something. Albeit contentious, more promising examples of qualities are the so-called *positional properties* (Molnar 2003). These are properties such as that of being oriented toward a certain direction or being located at a certain space-time point. The idea that positional properties are qualities is shared by Ellis, who consider magnitudes to be categorical properties as well. For example, he says:

[...] The most fundamental causal powers in nature have dimensions. They may be located or distributed in space and time, be one or many in number, be scalar, vector or tensor, alternate, propagate with the speed of light, radiate their effects uniformly and so on. [...] These dimensions of the powers are the properties that I call categorical. (Ellis 2012, 17–18)

However, controversy remains. The categorical properties mentioned by Ellis do not seem to be powers, but one may argue that they do not seem to be fundamental either. Recall that Categoricalism is a thesis about fundamental properties. Whether or not positional properties and magnitudes are qualities is insufficient to establish Categoricalism. One needs to show that positional properties and magnitudes are indeed fundamental. By way of example,

consider location. The question of whether location is a fundamental property depends on one's view of space-time. On *substantivalist* views of space-time, locations exist independently from the things that can occupy them. They are therefore more fundamental than things that have a location. On *relationalist* views of space-time, locations, and other positional properties, are less fundamental than things that bear them. It is important to keep these issues separate: it is one thing to claim that location (or any other positional property) is a not power; it is another thing to claim that locations (or other positional properties) are fundamental.

Ellis claims that categorical properties “must be ontologically more fundamental than the causal powers” (2010, 18). An immediate question arises: why believe that the fundamental properties of our world are essentially non-dispositional qualities?

Two important ideas motivate Categoricalism: (i) that there are no necessary connections between a property and its dispositional feature; (ii) that dispositions need a ground for existing unmanifested.

The first idea reveals a commitment to Hume's Dictum, which states that: “there is no object, which implies the existence of any other if we consider these objects in themselves” (Hume, *A Treatise of Human Nature*, Book I, Part III, §VI). It is better to avoid the discussion of status and grip of Hume's Dictum for it would divert us from the purpose of this chapter (See Wilson 2010 for a more detailed discussion). It suffices to note that the categoricist typically believes that the possession of certain dispositional features is a matter of metaphysical contingency. On this view, if Newton's Law of gravitation had been different, gravitational mass could have been linked with the disposition of generating a different kind of force.

The second idea targets the possibility that dispositions can exist unmanifested. An electron is disposed to repel other negatively charged particles even if it is not occurrently doing so. But what warrants the existence of the electron's disposition when it is not manifested? A popular strategy is to invoke categorical, non-dispositional bases that ground the existence of unmanifested dispositions (Prior, Pargetter and Jackson 1982; Prior 1985). The idea is that an electron's disposition to repel other negatively charged particles, when it is not manifested, is grounded in some other categorical property of the electron.

According to this view, the categorical basis of a property plays the role of being a “causally operative sufficient condition” for bringing about the relevant disposition (Prior, Pargetter, and Jackson 1982, 251). This is to say that in virtue of its categorical basis, a disposition is manifested when the appropriate circumstance occurs. To use the previous

example, the categorical basis of an electron's charge is responsible for the manifestation of repulsive behaviour when it interacts with other electrons.

My aim here is to illustrate Categoricalism, so I will not discuss the force of the previous motivations. We are now in position to offer a more precise characterisation of qualitative properties. In the spirit of Molnar's list of basic features of powers (2003), here is an attempt to capture the basic features of qualities.

(a) *Qualities are essentially self-contained*

The essential feature of dispositional properties is their *Directedness* toward certain manifestations. By contrast, qualitative properties lack *Directedness*: as Armstrong puts it, they are essentially "self-contained" (1997, 69). If the property of occupying a certain location were a qualitative property, then it would not be directed toward any characteristic manifestation.

(b) *Qualities are categorical properties*

Qualitative properties are occurrent, here-and-now features of things. For this reason, they are also called "categorical". Note that powers share this feature in virtue of *Actuality* (Molnar 2003, 99–101). It is therefore misleading to think of powers as non-categorical properties. I will return to this point in §2.4.

(c) *Qualities lack modal character*

It is a contingent matter what dispositional features a quality has. To put it differently, the dispositional character of a quality is not "essential or metaphysically necessary" (Bird 2007a, 67). In our world, for example, charge bestows upon their bearers the disposition to exert and experience a force in accordance to Coulomb's Law. In other possible worlds, charge bestows upon their bearers different dispositions.

(d) *Qualities have a primitive identity*

Categoricalism is committed to Black's Quidditism, the view that a property's identity is preserved across possible worlds (Black 2000). This allows for the possibility that the quality that has the dispositional features of charge in one possible world is the

same with the quality that has different dispositional features in another one. Here it is useful to recall that Black's Quidditism does not entail the existence of quiddities (§2.1.5). Categoricalism entails neither that qualities are quiddities nor that they have quiddities. Black's Quidditism is in fact compatible with the view that there are no quiddities (Locke 2012).⁵

The list of features (a)-(d) captures the basic features of qualities. Categoricalism can be therefore understood as the view that all fundamental properties have essentially features (a)-(d). As anticipated, there is no paradigmatic property that has (a)-(d). The property of occupying a certain location is a good candidate. It does not seem to be directed toward any distinctive manifestation. Since having a certain location is a matter of how a thing is like occurrently, it is also categorical. Given that it seems to lack of directedness, having a certain location may be associated with different dispositional features. Lastly, the categoricalist could argue the identity of the property of occupying a certain location is preserved across possible worlds. The same location can be occupied by different things in different worlds. So it would seem that the property of occupying a certain location is a quality. However, the question of whether location is a fundamental property remains. As I previously argued, this depends on one's view of space-time. The dispositionalist has room for maintaining that all fundamental properties are powers while accepting that location is a non-fundamental quality.

2.3.2 *Qualities with Powers*

If we endorse the mutual exclusivity of dispositionality and qualitativity, Categoricalism amounts to the view that all fundamental properties are not essentially dispositional. However, the categoricalist does not deny that the possession of qualities is associated with the possession of certain dispositions. The association is merely contingent. For example, Armstrong says: "if a thing has a certain mass, it is certainly true that it is disposed to act in certain ways" (Armstrong 1997, 81). The question is: how can the categoricalist accommodate the dispositionality of qualities?

Two main strategies emerge. The first one is to conceive of the dispositional features as higher-order properties that a thing has by virtue of having some lower-level, fundamental qualities. A view that adopts this strategy is the previously mentioned account defended by

⁵ Ellis suggested that another feature common to all qualitative properties is that they are "readily imaginable"; objects instantiating categorical properties "can be always pictured or drawn" (2002, 68). However, this is a controversial claim. This feature seems to pick out our ability as cognizers to think of qualities rather than a feature of qualities. So it ought not to be deemed as one of its basic features.

Prior, Pargetter and Jackson (1982). On this view, charge is associated with, for example, the disposition to produce an electromagnetic force. A thing has such a disposition by virtue of being charged. Despite its initial plausibility, this view faces a serious problem which has to do with the causal relevance of the higher-level dispositional property. Consider charge and the disposition to produce an electromagnetic force. When two charged particles interact, they exert an electromagnetic force. The question is: what property is responsible for the manifestation of an electromagnetic force?

If two particles have the disposition to produce an electromagnetic force in virtue of being charged, it can be argued that the manifestation of electromagnetic force obtains at least partially in virtue of the property of being charged. But then, it becomes unclear what role the disposition to produce an electromagnetic force plays. It seems that the fact that the particles are charged and the fact that they interacted suffice for accounting the manifestation of an electromagnetic force. It seems that there is no need to invoke the disposition to produce an electromagnetic force at all. It is therefore unclear why positing it in the first place.

There is a related problem: if a lower-level qualitative property is causally responsible for a certain manifestation, then it is unclear why this property should not be considered a power. If the qualitative property of charge is causally responsible for the manifestation of an electromagnetic force, it seems that charge is indeed powerful. It appears that the strategy of conceiving of dispositions as higher-level properties threatens the very commitment that qualities are not powerful. Presumably, the categoricist would argue that qualities owe their powerfulness to contingent laws of nature.

This leads us to the second strategy, which appeals to laws of nature. A leading representative of this strategy is David Armstrong (1983, 1997) (it is worth noting that Dretske 1977 and Tooley 1977 defended a similar view.) According to him, qualitative properties are associated with certain dispositions by virtue of contingent laws of nature. For example, charge and the disposition to produce an electromagnetic force are linked *because of* a law that relates them. Crucially, such a law is nomologically necessary, but metaphysically contingent: a different law could have related charge with a different disposition. This strategy fits smoothly with the categoricist's view that there are no necessary connections between a property and its dispositional features. However, its tenability is hostage to the question of whether laws of nature are metaphysically contingent. The discussion shifts its focus from properties to laws of nature. The question of whether laws of nature are metaphysically necessary is an interesting but complicated question. For the purposes of the chapter, it suffices to note that this is a separate issue (however, it should

be now clear that choosing between these views might have some modal import on laws of nature). It would be methodologically unattractive if the tenability of Categoricalism were to hang on the modality of laws of nature.

2.3.3 *Black's Quidditism*

In §2.1.5 I pointed out that Categoricalism endorses Black's quidditism, the view that properties have a primitive identity across possible worlds. As Robert Black's puts it:

“[N]othing constitutes the fact that a certain quality plays a certain nomological role in that world is identical with a certain quality playing a different in ours; they just are the same quality, and that's all that can be said.” (Black 2000, 92)

Black's Quidditism allows the possibility of two kinds of swapped-powers scenario: (i) it is possible that the same quality is associated with different dispositional features in different possible worlds: (ii) it is possible that the same dispositional features are possessed by different qualities in different possible worlds. The categoricalist and the dispositionalist have contrasting views with respect to (i) and (ii). A toy example will clarify the disagreement.

Consider a possible world w where there are only two qualities: charge and gravitational mass. In w , charge is associated with the disposition to generate an electromagnetic force; mass is associated with the disposition to generate a gravitational force. Black's Quidditism allows the possibility that in a different possible world w^* charge is associated with the disposition to generate a gravitational force and mass with the disposition to generate an electromagnetic force. The categoricalist regards the previous possibility as unproblematic; in contrast, the dispositionalist spurns it.

The categoricalist, who is committed to Black's Quidditism, holds that charge and mass in w are respectively identical with charge and mass in w^* . The identity of such properties is primitive and independent from the dispositional features they have. By contrast, the dispositionalist identifies properties with their dispositional features. Thus she denies that charge and mass in w are identical with charge and mass in w^* . Charge_w bestows upon a bearer the disposition to generate to an electromagnetic force; charge_{w^*} bestows upon a bearer the disposition to generate a gravitational force. Therefore, charge_w and charge_{w^*} are different. In same fashion, mass_w , which bestows upon a bearer the disposition to generate a gravitational force, is different from mass_{w^*} , which bestows upon a bearer the disposition to generate an electromagnetic force. Significantly, the dispositionalist blocks

the possibility of worlds like w and w^* . If charge_w is the power to generate an electromagnetic force, then this is so in every possible world where charge exists. A similar reasoning holds for mass_w .

Whether or not we should accept Black's Quidditism is a delicate issue. Here it is worth noting that the categoricist embraces the consequences of swapping-power scenarios. In contrast, if we adopt Dispositionalism, these are blocked.

2.3.4 *Against Qualities*

So far I have presented an overview of Categoricist. I will now turn to illustrate some standard objections against it. The first objection targets the commitment to Black's Quidditism. As I illustrated in the previous section, Black's quidditism allows for the possibility of swapped-powers worlds such as w and w^* (§2.3.3). The dispositionalist argues that Black's Quidditism has worrisome consequences with respect to our knowledge of properties. If a quality is distinct from its dispositional features, and if our access is restricted to the latter, then it seems that we are irremediably ignorant of the nature of quality. For example, we would not be able to tell which quality is associated with the dispositional feature of disposing a bearer to produce an electromagnetic force. This is because such a quality is distinct from the disposing a bearer to produce electromagnetic force and, more significantly, *any* quality could play that role. A dire consequence is that we would be unable to tell whether we are in a world where the disposition to produce an electromagnetic force is associated with a quality Q or Q^* . On Categoricist, this piece of knowledge inevitably remains beyond our epistemic grasp. The objection here is that Categoricist makes us ignorant of the nature of fundamental properties. It seems reasonable to hold that we should not endorse a view that imposes upon us such an ignorance.

The categoricist, however, could respond that such an irremediable ignorance is unproblematic (Lewis 2009). We should be humble and accept it. After all, we still know something about fundamental qualities: we know that there are qualities that are associated with certain dispositional features. Whilst this is true, the question of whether we should embrace a conception of properties that makes us irremediably ignorant about some facts about remains. In contrast, Dispositionalism does not face such a worry. On Dispositionalism, a property is identified with its dispositional features. On this view, once we know the dispositional features associated with fundamental properties, we also know what these fundamental properties are.

Another objection against Categoricist targets the link between qualities and quiddities. It is sometimes argued that "Categoricist entails quidditism" (Bird 2007a, 78).

As I clarified in the previous section, Categoricalism entails at most Black's Quidditism, the view that a quality preserves its identity across possible worlds (Black 2000, 92). However, some version of Categoricalism are indeed committed to the view that qualities have or are quiddities. An example of the former is Armstrong's (1989a). On this view, quiddities can be plausibly regarded as higher-order properties of qualities. An example of the latter is Lewis's (1986a). On this view, quiddities are first-order properties. The differences between these views are unimportant here: the arguments against quiddities apply to both views. For simplicity's sake, call any categoricalist view that holds that qualities are or have quiddities *Quidditist Categoricalism*.

It is useful to recall Chalmers's distinction between two conceptions of a quiddity (2012, 347–353; §2.1.5). On a thin conception, the quiddity of a property P is what makes P numerically distinct from every other property P*. On a thick conception, the quiddity of a property P is what makes P having a “substantial nature of some sort” and being numerically distinct from every other property P* (Chalmers 2012, 350). Plausibly, some arguments against Quidditist Categoricalism target one conception but not the other.

The main argument against Quidditist Categoricalism is based on a principle of ontological parsimony, which has been nicely captured by Dustin Locke (2012):

When given a choice between two metaphysical theories, one of which posits only ontological resources posited by empirical science, and the other of which posits the same resources of the first plus something that is not posited by empirical science, we have, all other things being equal, reason to reject the second theory in favor of the first. (Locke 2012, 349)

By adopting the above parsimony principle (or something in its vicinity), a crude version of the argument against Quidditist Categoricalism goes as follows.

- (1) Quidditist Categoricalism posits quiddities.
- (2) Science does not posit quiddities.
- (3) If a view posits entities in addition to those posited by science, then it ought to be rejected.

From (1)-(3), we obtain that:

- (4) Quidditist Categoricalism ought to be rejected.

This argument has a certain force for it relies on a parsimony principle that we ought to accept. However, it is too weak to rule out the existence of quiddities.

There is another argument against Quidditist Categoricalism which is worth mentioning. This is a semantic argument which targets views that identify categorical properties with quiddities, such as Chalmers's (2012, 348) and Lewis's (1986a) views. According to it, the fact that quiddities are unknowable affects our scientific claims (Hawthorne 2001, 367–368). The idea is that scientific knowledge requires us to know the referent of scientific terms. But on Quidditist Categoricalism this is not possible for we cannot know quiddities. Recall that qualities (here understood as quiddities) lie beyond our epistemic reach. Therefore, we cannot know the referent of terms such as “mass” and “charge”. As a result, science is subjected to a pervasive indeterminacy of reference. Arguably, this worrisome consequence represents a reason for rejecting Quidditist Categoricalism.

The last argument against Quidditist Categoricalism which is worthy of mention expresses a metaphysical concern. The acceptance of quiddities, whether thin or thick, allows the possibility of a plethora of dispositionally indistinguishable possible worlds. Two possible worlds w and w^* can be indistinguishable with respect to the dispositional features instantiated, but differ with respect to the instantiated quiddities. Significantly, it seems that for every possible world w , there is a possible world w' for any possible recombination in the pattern of quiddities instantiated in w such that w' is dispositionally indistinguishable but “quidditistically” different from w . Those who think that this is an unacceptable proliferation will demur Quidditist Categoricalism.

The previous arguments express a distaste for quiddities on the grounds of their worrisome consequences. However, these arguments are far from being decisive. More importantly, they target only Quidditist Categoricalism (and other views that posit quiddities); they do not pose a threat to Categoricalism full stop, which is the view under scrutiny here.

The question of whether qualities, on a given conception, are or have thin/thick quiddities is to be decided on a case-by-case basis. Yet Black's Quidditism, which is endorsed by Categoricalism, imposes a severe constraint on our knowledge of properties. It should be now clear that such a restriction depends on the conception of fundamental properties that we adopt. If we favour Categoricalism, we are irremediably ignorant of the nature of fundamental properties associated with certain dispositions. In contrast, by adopting Dispositionalism, we escape ignorance for the nature of fundamental properties is

determined by their dispositions. Such a substantive difference concludes an overall overview of these doctrines.

2.4 A Real Distinction?

2.4.1 A Neglected Feature

In the previous sections I offered an overview of Dispositionalism and Categoricalism. The substantivity of the dispute between these doctrines depends on the robustness of the categorical–dispositional distinction. Only if there is a real, joint-carving distinction between the qualitative (categorical) and the dispositional, the decision between Dispositionalism and Categoricalism is an ontologically serious matter. Otherwise, the dispute between these views is non-substantive. Namely, it is not an ontologically serious matter. An immediate question arises: is there a real distinction between qualitative and dispositional properties?

On certain conceptions, the categorical–dispositional distinction fails to demarcate an ontologically robust difference between kinds of property. This is because an important feature of dispositional properties is neglected. In this section, I will explain how ignoring such a feature leads to an inaccurate characterisation of powers.

Canonically, powers and qualities are defined in opposing terms: powers are essentially dispositional; in contrast, qualities are *not* essentially dispositional. These definitions warrant that a property is either a power or a quality. But what ground do we have for believing that the mutual exclusivity between powers and qualities demarcates a distinction in reality?

The term “categorical” means “unconditional”. This is taken to justify the distinction between qualities, whose nature does not involve conditions, and powers whose nature does. Powers bring about their manifestations only *in appropriate circumstances* (Molnar 2003, 82–83). The mistake is to infer that “categorical” is equivalent to “non-dispositional”. This understanding erroneously suggests that dispositional properties are non-categorical. Namely, that powers are properties whose existence depends upon the satisfaction of certain conditions. However, this is not how the dispositionalist conceives of powers.

Given the feature of *Actuality* (Molnar 2003; §2.2.2), powers are here-and-now properties of their bearers. If a thing has some powers, it has them unconditionally, or categorically. For example, if an electron has the power to produce an electromagnetic force, then this power is a categorical property of the electron. It is not that the electron has the power to exert produce an electromagnetic force just in case some condition occurs. It is

only the manifestation of electromagnetic force that is conditional for it obtains only in appropriate circumstances.

If the categorical–dispositional distinction is taken to imply that qualities are categorical while powers are not, then it fails to demarcate a real distinction between these kinds of property. Arguably, both dispositionalists and categoricallists see themselves as engaged in a serious ontological dispute. Thus both camps need to justify the robustness of the categorical–dispositional distinction in a more compelling way.

A more promising strategy is to consider Molnar’s feature of *Directedness* (2003). According to it, powers are essentially directed toward some distinctive manifestation. If we aim to preserve the mutual opposition between powers and qualities, it is reasonable to think of qualities as lacking *Directedness*. The idea is that if qualities are non-dispositional, then they are not essentially directed towards any manifestation. Accordingly, we can characterise dispositional and qualitative properties as follows.

Dispositional Property: a property P is dispositional if and only if there is a manifestation M such that P is essentially directed toward M.

Qualitative Property: a property P is qualitative if and only if there is no manifestation M such that P is essentially directed toward M.

The categorical–dispositional distinction based on *Directedness* provides us with a workable criterion for distinguishing between powers and qualities. Significantly, it preserves the mutual exclusivity of powers and qualities, which both the dispositionalist and the categoricallist presumably desire. Either a property has *Directedness* or not. In same vein, the view that all fundamental properties have *Directedness*—as Dispositionalism contends—is incompatible with the view that they lack of it—as Categoricallism maintains. However, the question of whether the categorical–dispositional distinction based on *Directedness* carves reality at the joints remains. We need some arguments to establish that there is a real, ontologically robust distinction between powers and qualities from their mutual exclusivity. I will now discuss some considerations for and against the idea of a real distinction between powers and qualities.

To corroborate the serviceability of the distinction based on *Directedness*, let us consider two persuasive examples. The first one is from Molnar (2003, 158–165), who argues that positional properties such as that of being spatiotemporally located at a location *l* lack of *Directedness*. Consider an electron located at *l*. If the electron were to move to a

different location l^* , this would not affect its power-profile. The electron would not receive any novel power by virtue of its new location l^* ; the electron's powers would remain "intact", as it were (Molnar 2003, 160). However, Molnar acknowledges that positional properties affect the manifestation of powers. For example, by moving from l to l^* , the electron exerts an electric force with a different magnitude on another charged particle. If we assume that the electron has one and the same property of charge in l and l^* , we should accept that the change in location is causally relevant in determining the manifestation of the electron's charge. We should conclude, as Molnar does, that positional properties play a central role in how powers are manifested (Molnar 2003, 163–164).⁶ If Molnar were right—namely if positional properties were lack of *Directedness*—and if we embrace the categorical–dispositional distinction based on *Directedness*, then positional properties would be qualities.

The second example is from Ellis (2012), who singles out what he calls *dimensions* of powers as putative non-powers. For instance, he says that:

[...] The most fundamental causal powers in nature have dimensions. They may be located or distributed in space and time, be one or many in number, be scalar, vector or tensor, alternate, propagate with the speed of light, radiate their effects uniformly, and so on. But these dimension of powers are not themselves powers. (Ellis 2012, 17)

If we adopt the distinction based on *Directedness*, the properties mentioned by Ellis would not be directed toward any distinctive manifestation. This seems to capture the intuition that the "dimensions" of powers do not themselves empower their bearers in any distinctive way.

At first impression, the distinction based on *Directedness* appears to be more adequate than the one based on categoricity for it ensures the mutual exclusivity of powers and qualities. However, a problem remains: it does not warrant that there *really* is a robust distinction between powers and qualities. Two significant considerations threaten the robustness of the distinction based on *Directedness*.

First, the case of positional properties is controversial. These properties are intuitively non-powers, but there is no consensus on whether or not they are fundamental. It is therefore possible that positional properties are non-powers and yet non-fundamental. As previously mentioned, the question of whether or not positional properties are fundamental

⁶ It is worth noting that if one takes charge at l to be distinct from charge at l^* , then it would be the case that having a different location empowers the electron in distinctive way. In my understanding, Molnar does not consider such a possibility.

depends on one's view of space-time (§2.3.1). This calls into question the idea of invoking positional properties to reinforce the distinction based on *Directedness*.

Second, one can argue that inferring a real distinction from the distinction based on *Directedness* is mistaken for it is to draw an ontological distinction from a conceptual one. One could hold that *Directedness* is a matter of how we conceive of properties. Namely, it is a matter of regarding certain properties as directed toward certain manifestations. From the fact that some properties are thought of as having *Directedness* and others as lacking it does not follow that that is a real distinction between kinds of property. The analogy here would be with the famous case of the Morning Star and the Evening Star. We were wrong in inferring the existence of two distinct planets. It turned out that we were picking out one and the same heavenly body in different ways. The distinction based of *Directedness* does not rule out the possibility that powers and qualities are merely different ways of conceiving of one and the same property kind.

The above considerations against the robustness of the categorical–dispositional distinction are compelling. Unless one has already presupposed it, we cannot ensure that there is a real distinction between powers and qualities from the fact that we have different ways of conceiving of fundamental properties. In absence of a better argument, it is imprudent to inflate our ontology. We should therefore explore an alternative conception of fundamental properties that does not separate the dispositional and the qualitative. A promising approach is the *powerful qualities view* primarily championed by C.B. Martin and John Heil (Heil 2003, 2010, 2012; Martin 1993, 1997, 2008; Martin and Heil 1999). By taking seriously the idea that the categorical–dispositional is conceptual only, they propose a conception of fundamental properties which is superior to both Dispositionalism and Categoricalism. I will devote the next chapter to elaborate this claim.

CHAPTER 3

POWERFUL QUALITIES

Properties are not purely qualitative (the proponents of dispositionalism are right about that). But neither are properties purely dispositional (in this we agree with those suspicious of pure dispositionalism). Instead, every property is at once dispositional and categorical—or, as we prefer, dispositional and qualitative. Dispositionalism and qualitativism are built into each property; indeed, they are the property. (Martin and Heil 1999, 46)

3.1 “Nothing is Pure”

3.1.1 *A Distinction in Description*

Two dominant views embrace the robustness and mutual exclusivity of the power–quality distinction: *Dispositionalism*, which holds that all fundamental properties are essentially dispositional, or powers; and *Categoricalism*, which maintains that all fundamental properties are not essentially dispositional, or qualities. As illustrated in Chapter 2, the choice between these doctrines commits us to contrasting views about the world and its laws of nature. The Dispositionalism vs. Categoricalism dispute is therefore relevant for both philosophy and science.

Yet some properties of our world appear to be dispositional *and* qualitative in character. Consider mass and charge, two putative fundamental properties. By virtue of having a certain mass, a particle is disposed to produce a gravitational force. This would suggest that the property of having a certain mass is a power. At the same time, by having a certain mass, the particle has a certain quantity of matter that can be measured in kilograms. This does not seem to be a disposition. Rather it seems to be a matter of how the particle is occurrently like, or qualitatively. Now consider charge. By virtue of having a certain charge, a particle is disposed to produce an electric force. This would lead us to think of it as a power. However, by having a certain charge, a particle has also a certain quantity of charge that can be measured in coulombs. Like the possession of certain quantity of matter, the possession of certain quantity of charge does not seem to be a disposition. Rather it seems to be a matter of how the particle is qualitatively like. The problem for both Dispositionalism and Categoricalism is that they are unable to capture this fact. On both views, a property cannot be at the same time dispositional and qualitative. But if some properties appear to be

dispositional and qualitative, then we should explore a conception of properties that is able to accommodate them.

Fortunately, there is a theory of fundamental properties that is up for the task. This is *powerful qualities view*, primarily championed by C.B. Martin (2008) and John Heil (2003; 2012).⁷ According to the powerful qualities theorist, every fundamental property is at once dispositional or qualitative—or, more informally, a “powerful quality”.

The purpose of this chapter is twofold: first, I will show that a conception of fundamental powerful qualities is superior to both Dispositionalism and Categoricalism; second, I will clear the way toward a novel account of powerful qualities.

In its canonical version, the powerful qualities view is committed to a controversial identity claim between a property’s dispositionality and its qualitativity. In the literature, this view faces the charge of contradiction (Armstrong 2005, 315; Bird 2007b, 514; Barker 2013, 649). We should therefore explore an alternative account of powerful qualities. To accomplish this aim, firstly we have to show that a conception of powerful qualities is independent from such an identity claim. As I will explain in due course, this is in fact the case.

Here is the plan. In §3.1, I will present the discontent of the powerful qualities theorist with the categorical–dispositional distinction. In §3.2, I will introduce the new notion of an *aspect* which will prove to be extremely serviceable in characterising powerful qualities. In §3.3, I will discuss the canonical version of powerful qualities and the identity claim. In order to disambiguate it, I will propose a distinction between two senses of dispositionality and qualitativity. In light of such a distinction, I will examine three plausible readings of the identity claim between a property’s dispositionality and its qualitativity. This will free the view from the charge of contradiction. However, in §3.4, I will offer some considerations against each of the proposed readings. This is not bad news: my conclusion will be that even if the identity claim were to fail in any of the suggested readings, it would be possible to adopt a conception of fundamental powerful qualities.

To begin with, the powerful qualities view demands the rejection of the mutual exclusivity of the dispositional and the qualitative. Of course, if one holds that the qualitative is the non-dispositional, a conception of powerful qualities will be contradictory. Some dispositionalists and categoricallists accept that powers and qualities are mutually exclusive. For example, Brian Ellis nicely summarizes the canonical incompatibility between these two conceptions as follows:

⁷ Others that adopted this view are Carruth (2016), Jacobs (2011), Jaworski (2016), Strawson (2008a), Taylor (2013), Robb (2017).

Categorical properties [qualities] are thought of as properties that things may have independently of how they may be disposed to behave: they are considered to be essentially non-dispositional. Dispositions [powers], on the other hand, are supposed to be essentially dependent on how things are disposed to behave in various possible circumstances. (Ellis 2002, 68)

The powerful qualities theorist has two strategies for rejecting the mutual exclusivity of the dispositional and the qualitative: one is to conceive of qualitativity in a compatible way with dispositionality, the other is to argue against the robustness of the categorical–dispositional distinction. Let us discuss them in order.

Qualitativity is a matter of how a thing is like. In turn, how a thing is like is a matter of its qualities. For example, Heil says that “the ways things *are* are qualities” (2010, 70). Since how a thing is like is a matter of its actual or occurrent properties, we can think of a thing’s qualitativity as determined by its actual properties. As Alex Carruth notes (2016), it is important to distinguish between this conception and the qualitativity that is standardly associated with the phenomenal character of experience. The powerful qualities theorist is not committed to the view that a thing’s qualities are phenomenal in character. Here are some examples to illustrate the conception that the powerful qualities theorist has in mind: being negatively charged, having a rest mass of $9.11 \times 10^{-31} \text{Kg}$, and $\frac{1}{2}$ spin are qualities of an electron; these are ways the electron is occurrently like.

This characterisation of the qualitative is not particularly informative, but it allows the possibility that a quality is indeed a power. If to be a quality is to be an actual property of a bearer, then a power may well be a quality. Recall that powers are actual properties of their bearers. The question of whether we can provide a more informative characterisation in positive terms of qualitativity remains. But this challenge does not burden only the powerful qualities theorist. Arguably, the categoriclist faces it as well.

The second strategy is to deny the ontological robustness of the distinction between powers and qualities. If the distinction between them were *conceptual* or *in description* only, it would be possible to hold that the nature of fundamental properties is at once dispositional and qualitative. To defend this strategy, the powerful qualities theorist claims that we are not entitled to infer an ontological distinction from our ability to conceive of properties in different manners (Heil 2003, 111–115; Martin 2008, 64). Consider the fragility of a vase: sometimes we describe it in dispositional terms as the vase’s disposition to shatter; other times, we describe it in qualitative terms as the vase’s structural arrangement of its

molecules. The powerful qualities theorist contends that the distinct ways of describing fragility do not pick out distinct kinds of property of the vase. So it is possible that the vase's fragility is at the same time dispositional and qualitative.

In the previous sense, dispositionality and qualitativity are *ways of considering* properties. Crucially, the dispositional and qualitative ways of considering a property do not demarcate a distinction in reality. We can make sense of the claim that a property is simultaneously dispositional and qualitative by saying that the same property can be regarded, or described in dispositional and qualitative terms. Let us call this claim *Partial Consideration* and formulate it as follows.

Partial Consideration: every sparse property can be considered as dispositional or qualitative.

A remark on the proposed formulation: the powerful qualities view is a thesis about the nature of fundamental properties, but the idea that we can consider properties in different ways seems to concern also sparse and yet non-fundamental properties (cf. Schaffer 2004). In spelling out the idea of partial consideration, the examples invoked by powerful qualities theorists include those of a ball's sphericity (Martin and Heil 1994, 45–46), the whiteness of snow (Heil 2003, 112–113), and the hardness of a diamond (Jaworski 2016, 55). This suggests that *Partial Consideration* is not restricted to fundamental properties only. However, it is important to bear in mind that the powerful qualities theorist does not hold that *all* properties are powerful qualities. Nor does she claim that *all* properties can be considered in qualitative or dispositional terms.

The idea that we can consider the same property in different ways echoes the Lockean notion of partial consideration. To partially consider a property as dispositional or qualitative is to consider the whole and unitary property in a certain way. When we are dispositionally considering a property, we consider it as power; when we are qualitatively considering the same property, we consider it as a quality.

What “considering a property” precisely means is unclear. Here there is no need to discuss the cognitive abilities involved in this process. Two remarks will suffice. First, to partially consider a property is a mental act. Roughly, it is a matter of conceptualizing or describing a property in a certain way. *Partial Consideration* is therefore a conceptual claim. Second, to consider a property dispositionally or qualitatively involves a process of abstraction: it requires us to select a dispositional or qualitative feature of a property and then consider it as a whole according to that feature (Heil 2003, 172). This has a crucial

implication: a property *has*, in a sense yet to be illustrated, dispositional and qualitative features. The act of partially considering a property has to be distinguished from the mere ascription of dispositional and qualitative descriptions to a property. As I will explain in due course, this one of the central tenets of the powerful qualities view.

To illustrate *Partial Consideration*, Martin and Heil draw an analogy between properties and ambiguous figures (1999, 46–47). Think of the famous duck-rabbit illustration: sometimes we perceive it as a duck; other times as a rabbit. On both occasions, we are looking at the very same picture. Like ambiguous figures, the same property can be regarded in different ways. We can regard fragility as the power to shatter or the quality of having a certain structural molecular arrangement.

Partial Consideration is a conceptual claim about how we can think of properties. However, the powerful qualities view is a thesis about the nature of fundamental properties. As Martin puts it, on the powerful qualities view, “[...] properties to have a dual nature: in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (2008, 64). It is therefore important to distinguish between *Partial Consideration* and the ontological claim that all fundamental properties are powerful qualities.

Note that *Partial Consideration* and the ontological claim that all fundamental properties are powerful qualities are independent. Namely, someone could endorse one claim but not the other. Yet *Partial Consideration* alone does not get us at the heart of the issue: if we wish to develop a superior account to Dispositionalism and Categoricalism, then we have to embrace the ontological claim. *Partial Consideration* is in fact compatible with both Dispositionalism and Categoricalism. The dispositionalist can accept that we possess dispositional and qualitative ways of describing properties and yet maintain that all fundamental properties are essentially powerful. For example, Alexander Bird grants that “dispositional and non-dispositional expressions may co-refer” (2012, 279). In same vein, the categoricalist can maintain that the nature of all fundamental properties is essentially qualitative and yet endorse *Partial Consideration*. If we aim to preserve the difference among Dispositionalism, Categoricalism, and the powerful qualities view, then we need to treat them as distinct ontological theses.

Before proceeding any further, there is an important limitation that we need to acknowledge. Powerful qualities are properties that are at once dispositional and qualitative. It is tempting to regard them as conjunctive properties. As it will become clear in this chapter, this is not the conception that the powerful qualities theorist has in mind. Unfortunately, there is no satisfactory way to prevent the impression that powerful qualities are conjunctive.

One has to bear with the ambiguity. While such a problem is not a serious threat to the powerful qualities view, it obfuscates its merits. That said, if the attempt of elucidating the view is successful, it will become clear that merits of the view are worth tolerating the ambiguity.

3.1.2 *Against Pure Powers*

Proponents of the powerful qualities view reject the idea that all fundamental properties are *purely dispositional*, or *pure powers* (Martin and Heil 1999, 46). This allows them to evade some of the objections against pure powers versions of Dispositionalism. At first approximation, a power is pure if all there is to its nature is “its contribution to the dispositionalities of its possessors” (Heil 2003, 97). Others have characterised pure powers in similar ways:

What makes a property the property it is, what determines its identity, is its potential for contributing to the causal powers of the things that have it. This means, among other things, that if under all possible circumstances properties X and Y make the same contribution to the causal powers of the things that have them, X and Y are the same property. (Shoemaker 1980, 114)

[Pure powers are] nothing more than a set of connections to, and causal powers for, other properties. (Mumford 2004, 185)

“Readiness for action” is all that pure powers are. (Marmodoro 2010, 29)

[...] powers are at least partially individuated by their places in a causal structure—a type-causal structure of powers primitively related in specific ways to their stimulus and manifestation properties. Pure powers are wholly individuated by their places in such a structure. (Yates 2017, 3)

Pure powers versions of Dispositionalism face the “always packing, never travelling” objection: if powers are nothing but readiness for action or directedness toward certain manifestations, then they are never actualised (Armstrong 1997, 80; Chapter 2, §2.2.5). In contrast, the powerful qualities theorist claims that there is more to the nature of a property than its readiness for action; a powerful quality also possesses some qualitative features. For example, charge is not exhausted in being the power to produce an electromagnetic force.

But it also qualitatively contributes to how charged things are like. For example, by bestowing upon them a certain quantity of charge.

The powerful qualities view has another advantage: it avoids the commitment to the existence of ungrounded powers (e.g. Molnar 2003; Mumford 2006). The ground of a power is an entity, which can be a property or something else, in “virtue of which a thing has the power” (Molnar 2003, 125). A standard objection against ungrounded powers goes as follows: if nothing grounds the existence of a power when it is not manifested, then there is no reason for believing in its existence when it is not manifesting. A conception of properties that come and go into existence so blithely looks suspicious. This objection threatens the claim that powers can exist unmanifested.

A standard strategy to avoid the previous objection is to hold that every power has a qualitative basis, which is a property that plays the grounding role (e.g. Prior, Pargetter and Jackson 1982). On this view, powers ontologically depend on qualitative properties. Consequently, the qualitative is more fundamental than the dispositional. This view is therefore in the ballpark of Categoricalism. On the powerful qualities view, a property’s qualitativity can play the role of its qualitative basis. Thus the powerful qualities view avoids the commitment to ungrounded powers. However, it has to be distinguished from views that invoke a qualitative basis or ground for powers. There is no asymmetry in a powerful quality’s dispositionality and its qualitativity: the powerful qualities theorist holds the dispositional and the qualitative are “equally basic” (Martin and Heil 1999, 46). In contrast, on a qualitative basis view, the qualitative is more fundamental, or basic than the dispositional.

There are two arguments that can be extrapolated from Martin’s and Heil’s works (Martin 2008, 44–45; 64–65; Martin and Heil 1997, 45–47). Unfortunately, they are not presented explicitly. Yet it is worth considering a more precise reconstruction for they can be tweaked to support the adoption of powerful qualities. Accordingly, the conclusion of both arguments is that powers are not purely dispositional properties because they have a qualitative, non-dispositional feature. To discuss these arguments, we need to clarify the notions of *pure power* and *dispositional feature*.

A natural way of thinking of a pure power is to regard it as a property that possesses only dispositional features. More precisely, we can define a pure power as follows.

Pure Power: a property P is a pure power if and only if P has only dispositional features.

Now we need to clarify what a dispositional feature is. Any realist about powers takes *Directedness*, *Independence*, and *Actuality* to be basic features of powers (Molnar 2003). To repeat, *Directedness* is the feature according to which every power is directed to, or point toward a characteristic manifestation (Molnar 2003, 60), *Independence* captures the idea that powers are ontologically independent from their manifestation (Molnar 2003, 82), and *Actuality* is the idea that every power is an actual or occurrent property of its bearer (Molnar 2003, 99–101).

A plausible way of regarding these features is to take them to be higher-order properties of powers in a liberal, ontologically lightweight sense. This is to say that claiming that a power has the property of *Directedness*, *Independence*, and *Actuality* does not amount to the view that these properties are over and above the power itself. This qualification is necessary for two reasons. First, if *Directedness*, *Independence*, and *Actuality* were properties in a robust sense, then every power would turn out to be a conjunctive property. But power theorists do not conceive of all powers as conjunctive properties whose conjuncts are *Directedness*, *Independence*, and *Actuality*. This, however, leaves open the possibility that some powers are conjunctive in the sense that they are conjunctions of powers. Second, a conjunctive view of powers clashes with the widely held view that fundamental properties are simple, namely not constituted by further properties. If *Directedness*, *Independence* and *Actuality* are properties of fundamental powers in a robust sense, then fundamental powers turn out to be complex properties.

Having clarified the notion of a dispositional feature, let us consider the argument hinted at by Heil (2003, Chapter 8; 2012, Chapter 4). Since it targets the feature of actuality, let us call it “Actuality Argument”. If sound, the Actuality Argument establishes that powers cannot be purely dispositional properties *because* their actuality is not a dispositional feature. It is worth flagging that the original version of the argument appears to target only power tropes (Heil 2003, 81–84; 125–127). While it seems possible to extend it without particular complications to a conception of powers as immanent universals, it is unclear whether the feature of *Actuality* applies to Platonic universals. In its simplest form, the Actuality Argument can be reconstructed as follows.

- (1) A power is pure if and only if it has only dispositional features.
- (2) Every power has the feature of actuality.
- (3) The actuality of a power is not a dispositional feature.

From (1)-(3), we reach the conclusion:

- (4) Every power is not pure.

Premise (1) is the definition of *Pure Power*. Premise (2) is the feature of *Actuality* (Molnar 2003, 99–101). Along with many dispositionalists, Heil accepts that powers are actual in the sense of being occurrent properties of objects (2003, 75–84; 125–127; 2012, 58–62). The crucial premise of the Actuality Argument is (3), which express the idea that the actuality of a power is not a dispositional feature.

The mark of dispositionality is *Directedness*, namely the idea that dispositional properties are directed to, or point toward some characteristic manifestations in characteristic circumstances. A property or feature that lacks *Directedness* is not dispositional. Premise (3) can be therefore understood as the claim that the actuality of a power lacks *Directedness*. This seems quite right. The actuality of a power does not seem to be directed toward any distinctive manifestation. Nor is it manifested in any distinctive fashion. Rather it is just a way an actual power is like. For example, consider an electron that has the power to produce an electromagnetic force. This power is an actual property of the electron, namely it has the feature of actuality. But the actuality of the power to produce electromagnetic force is not manifested in any distinctive way. The production of electromagnetic force is a manifestation of the power to produce an electromagnetic force; it is *not* a manifestation of its actuality. Here I acknowledge that such an interpretation is controversial. However, Heil seems to support it. For example, he says that “actuality is one thing, potentiality something else altogether” (Heil 2012, 59). This strongly suggests that we should not think of actuality in dispositional terms.

From premises (1)-(3), we reach the conclusion (4): powers are not purely dispositional. Such a conclusion threatens the prospects for an ontology of pure powers. However, it does not establish that powers have a qualitative feature. In order to do so, we need an additional premise such as (5) or something in the vicinity:

- (5) If a feature of a property is not dispositional, then it is a qualitative.

If (5), then from (1)-(4), we get the conclusion:

- (6) Every power has a qualitative feature.

Premise (5) is of course controversial: without further qualification, this conditional is seemingly false. In fact, (5) presupposes that dispositionality and qualitativity are the only two kinds of feature. But this is a substantial claim that needs some defence. For example, suppose that “being self-identical” is a feature of a power. Arguably, being self-identical is not directed toward any distinctive manifestation. Namely, there are no characteristic circumstances in which being self-identical is manifested. Yet it is dubious whether being self-identical is a genuine qualitative feature. Does being self-identical qualitatively contribute to how a property is like? There is no clear answer to this question. Every property, be it gerrymandered as you like, has the feature of being self-identical. It seems that this feature is best understood as a logical feature or, as E. J. Lowe (2006) puts it, *manner of existence*: a feature that describes how every property goes about the business of existing. We should allow the possibility that properties may have dispositional, qualitative, and logical features (or, more generally, other features that are neither dispositional nor qualitative).

For the sake of the argument, however, let us grant that (5) can be made more plausible. The Actuality Argument would have then the surprising conclusion that powers are dispositional and qualitative, namely powerful qualities.

The Actuality Argument can be resisted in a number of ways, however. To begin with, the pure power theorist can argue that (1) fails to capture the relevant notion of purity. Alternatively, she can deny (2) and admit unactualised powers. Premise (3) can be rejected as well. The obvious strategy is to argue that the actuality of a power is indeed a dispositional feature. This is to say that the actuality of a power has a characteristic manifestation in a characteristic circumstance. Think of a continuous stream of a fountain. One could argue that it is the manifestation of the actuality of the power of the fountain’s engine. Something similar could be argued for the actuality of every power.

While the Actuality Argument can be resisted, it carries a certain force. Premise (1) is a quite plausible formulation of what a pure power is. To reject (1) leaves unclear the sense in which a powers may be pure (cf. Taylor 2018). The admission of unactualised powers is an unlovely strategy for it goes against the spirit of Dispositionalism (Chapter 2, §2.2.1). This is captured in the Eleatic Stranger’s dictum, which paraphrased states that to be is to be a power to make a change in what is going on in the world (Plato, *Sophist* 247d-e). Arguably, unactualised powers make no difference in worldly happenings.

Despite its initial plausibility, the strategy of taking actuality as a dispositional feature of powers has some implausible consequences. If the actuality of a power P is a dispositional feature of P, then P has a power in virtue of its actuality. But this affects the

identity and nature of P. Think of charge as the power to generate an electromagnetic force. The identity of charge is determined by the way it empowers its bearers, namely by disposing them to produce an electromagnetic force. However, if the actuality of charge is a dispositional feature of this property, then charge has an additional power in virtue of its actuality. Thus an instance of charge is the power to generate electromagnetic force *and* the power to do something else in virtue of its actuality. Consequently, the identity of such an instance of charge is partially determined by its actuality. The same goes for its nature: if the actuality of an instance of charge is a dispositional feature, then its nature is partially determined by its actuality. But intuitively, the nature of charge has nothing to do with its actuality.

The above implications sound odd. The pure power theorist is better off by accepting that the actuality of a power is not a dispositional feature. Note this is not to say that the property of being actual cannot be thought of as a power. Here it is important to distinguish between actuality as a property that actual particulars have and actuality as a feature of properties. The previous considerations target only actuality understood as a feature of properties.

If the Actuality Argument is sound, an ontology of pure powers is undermined. However, the conclusion of the Actuality Argument does not threaten Dispositionalism. In fact, we can hold that all fundamental properties are powers provided that they are not purely dispositional properties.

The second argument against pure powers is implicitly defended by Martin (1993, 519–520; 2008, Chapters 5–6). Since it is based on the feature of *Independence* of powers (Molnar 2003, 82–98), let us call it “Independence Argument”. Like the Actuality Argument, the original formulation appears to target trope powers and their manifestations (Martin 2008, 84–88). However, it could be extended at least to powers as thought of as immanent universals. The Independence Argument establishes that powers have a non-dispositional feature *because* they can exist when they are not manifested. In its simplest form, it can be reconstructed as follows.

- (1) A power is pure if and only if it has only dispositional features.
- (2) Every power has the feature of being ontologically independent from the occurrence of its manifestation.
- (3) A power’s feature of being ontologically independent from the occurrence of its manifestation is not a dispositional feature of it.

From (1)–(3) we reach the conclusion:

- (4) Every power is not pure.

Premise (1) is the definition of a pure power. Premise (2) captures the feature of *Independence*. For example, an electron has the power to produce an electromagnetic force even if it is not occurrently doing so (Chapter 2, §2.2.2). It is more difficult to elucidate premise (3). Martin suggests that when a power is not manifested, it exists as a “disposition-base” (1993, 518). This base is neither “potential being” nor “unactualized possibilia” (Martin 2008, 140; presumably, the plural of “possibilia” reflects Martin’s view that the same power can be manifested in different ways). Rather the disposition-base is conceived of as actual “readiness” or directedness towards some manifestations (Martin 2008, 29); an unmanifested power, so to speak, “waits ready to go” (Martin 2008, 55). Recall that the mark of dispositionality is *Directedness*. However, the readiness of an unmanifested power has no distinctive manifestation. It is seemingly contradictory to say that an unmanifested power has a distinctive manifestation. This is different from claiming that an unmanifested power is directed toward a distinctive manifestation. An example will clarify. Consider once again the property of having a certain charge. When unmanifested, it exists as a disposition-base or actual readiness of an electron, for example. Yet it would be directed toward the generation of an electromagnetic force. But its existence as disposition-base or actual readiness has no characteristic manifestation.

In similar way to the Actuality Argument, it is possible to link the Independence Argument with the powerful qualities view. To reach the conclusion that pure powers have a qualitative feature, we need the following additional premise, which is the same as the Actuality Argument:

- (5) If a feature of a property is not dispositional, then it is qualitative.

From (5), we reach the conclusion:

- (6) Every power has a qualitative feature.

The Independence Argument is more difficult to resist than the Actuality Argument. Also in this case, the pure powers theorist can argue that (1) fails to capture the relevant notion of a pure power. But, to repeat, this is to deny a very plausible understanding of what a pure

power is. Rejecting premise (2) is not an available option: every powers view accept *Independence*. As Heil puts it, “it would be mad to require every actual disposition to be manifested” (2003, 82).

An alternative option is to reject premise (3) and argue that the unmanifested existence of a power is a dispositional feature. The problem with this strategy is that the claim that an unmanifested existence of a power has a distinctive manifestation seems to be contradictory. Someone who denies (3) appears to be committed to the odd view, for instance, that *not* generating gravitational force is indeed a manifestation of an instance of gravitational charge when it is not manifest. Perhaps this view can be made less obscure. However, as it stands, this approach is conceptually unattractive.

Overall, it seems that the power theorist is better off by accepting that powers cannot be pure. Like the Actuality Argument, the Independence Argument does not threaten non-pure powers versions of Dispositionalism. It is worth stressing that the Independence and Actuality Arguments are plausible reconstruction of remarks made by powerful qualities theorists. However, as I mentioned at the beginning of this chapter, there are independent reasons for endorsing the powerful qualities view. It would be a mistake to treat the powerful qualities view as hanging on these arguments.

3.1.3 *Against Pure Qualities*

The powerful qualities theorist does not offer any original objection against Categoricalism, the view that all fundamental properties are qualities. I shall not discuss again the arguments against Categoricalism here (see Chapter 2, §2.3.3-§2.3.4). However, some considerations in the spirit of those raised against pure powers can be offered against a *pure qualities* version of Categoricalism (here I will not attempt to single out those categoricalists who are actually committed to this version). It is possible to construct an argument against pure qualities based on the idea that qualities affect our experiences. For instance, Heil claims that qualities “produce a certain kind of experience in us” (2003, 111). One way to spell out this claim is to say that qualities have certain manifestations or effects on conscious observers. To illustrate the idea, consider a scarlet marble. Being scarlet is a quality of the marble. Yet is uncontroversial to claim that this quality affects us in a certain way: it produces a sensation of scarlet in us. By considering this as dispositional feature of qualities, we can assemble what we can call the “Experience Argument” against pure qualities. In its simplest form, this argument can be reconstructed as follows.

- (1) A quality is pure if and only if it has only qualitative features.
- (2) Every quality has the feature of producing a certain experience when it is perceived by a conscious observer.
- (3) A quality's feature of producing a certain experience when it is perceived by a conscious observer is a dispositional feature of it.

From (1)-(3), we reach the conclusion that:

- (4) Every quality is not pure.

Premise (1) expresses a plausible interpretation of what a pure quality is. Premise (2) conveys the idea that qualities affect our experiences when they are perceived. Here we can set aside worries related to what a conscious observer is. We can think of it as a paradigmatic human being capable of conscious experiences. This is sufficient for the plausibility of (2). Premise (3) is the claim that producing a certain kind of experience is a dispositional feature of qualities. The idea is that the way a quality affects conscious observers is a manifestation of the quality's dispositionality. From these premises, we reach the conclusion (4). Note that the Experience Argument does not rule out the existence of qualities. It only establishes that they cannot be really pure.

Unsurprisingly, there are several ways to resist the Experience Argument. The pure qualities theorist can argue against (1). For example, she might claim that the "purity" of a quality has to be understood in a different way. Premise (2) is more difficult to reject. Unless one takes them to be unperceivable, it seems that many qualities do produce in us a certain kind of experience such as colours, shapes, and smells. However, someone can argue that (2) is not true for every quality. The pure qualities theorist might claim that fundamental qualities do not affect us in any distinct way. For example, she might argue that we do not perceive charge and mass of electrons (provided that these are fundamental qualities). To resist this objection, one can argue that we perceive some qualities indirectly. While we do not directly perceive the charge and mass of an electron, we do perceive their effects on measuring devices. Alternatively, one can even argue that we perceive fundamental qualities directly. For example, it can be argued that a bodybuilder who lifts a barbell loaded with heavy plates directly perceives its mass. Similarly, when a distracted passer-by touches an electric wire, she experiences directly the property of charge.

Presumably, the main target against the Experience Argument is premise (3): the pure qualities theorist would claim that producing a certain experience is not a dispositional

feature of quality. The mere association between the perception of a quality and certain experiences does not guarantee that the quality is responsible for their production. The impression, one might say, is created by the regular succession of a perception of the quality in question and a certain kind of experience. The mistake is therefore to ascribe to a pure quality a feature of our experience. Such an objection is in the spirit of Humeanism that the pure qualities theorist presumably would endorse. The powerful qualities theorist would protest here. She would claim that it is a feature of a quality that is responsible for the way in which our experience of that quality is affected. Room for disagreement remains. It is not my aim to defend further the Experience Argument. I outlined this argument as a possible strategy against pure qualities from the viewpoint of the powerful qualities view.

In this section I discussed two possible arguments against pure powers and one against pure qualities. If sound, these arguments establish that any project of purely dispositional or purely qualitative properties is undermined. Such a result would be a decisive choice-point in favour of the powerful qualities view. However, powerful qualities theorists only hint at these arguments. The main consideration in favour of the adoption of a conception of powerful qualities is, the powerful qualities theorist contends, that there is no real distinction between powers and qualities.

3.1.4 *In Medio Stat Virtus?*

As I shall understand it, the powerful qualities view is committed to the thesis that all fundamental properties are essentially dispositional-and-qualitative, or powerful qualities. As Martin puts it:

Properties of entities constitutive of any state of affairs must be qualitative as well as dispositional, dispositional as well as qualitative. Dispositionality and qualitativity are correlative, complementary, inseparable and covariant when they are displayed in their intrinsic irreducible form at the level of the finer interstices of nature. (Martin 2008, 64)

It is tempting to regard the powerful qualities view as a middle ground between Dispositionalism and Categoricalism. But this would be a mistake: powerful qualities are a different and unitary kind of properties on a par with dispositional properties and qualitative ones. The hyphen in “dispositional-and-qualitative” is meant to capture such a difference.

One way to understand the distinctness of powerful qualities as compared to powers and qualities is to consider the respective mutual exclusivity of these conceptions. Qualities

are not essentially dispositional; in contrast, powers are essentially dispositional (Chapter 2, §2.3.1). This characterisation warrants the incompatibility between Dispositionalism and Categoricalism. Significantly, it also ensures that a powerful quality is not a conjunction of a power and a quality. Fairly obviously, it would be contradictory to claim that a powerful quality is essentially dispositional and not essentially dispositional. Thus the nature of a powerful quality has to be understood as a distinctive kind in addition to the dispositional and the qualitative. The aim of this chapter is to formulate in precise terms what it is for a property to be essentially dispositional-and-qualitative, or a powerful quality. To accomplish this purpose, in the next section, I will introduce the notion of an *aspect*. I will then discuss the canonical version of powerful qualities view which is committed to a distinctive identity claim between a property's dispositionality and its qualitativity. This view is known as the *Identity Theory* of powers (Heil 2003). In the literature, the Identity Theory faces the charge of contradiction (Armstrong 2005, 314; Bird 2007b, 514; Barker 2013, 649). In section §3.3 I will discuss three plausible ways in which such an identity claim can be understood. This will free Identity Theory from some initial obscurities. However, in §3.4, I will offer some considerations against any of the suggested readings. As such, my conclusion will be that a more promising account of powerful qualities should renounce the identity claim.

3.2 Powerful Qualities

3.2.1 Aspects of Properties

A powerful quality is a property that has a dual nature: “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character. The overall dispositionality and qualitative character of an object depend on the properties it possesses and relations these bear to one another” (Martin and Heil 1999, 45–46). To formulate this characterisation in precise terms, I will introduce the notion of an *aspect*. I will then argue that the powerful qualities view is best understood as the view that all fundamental properties have essentially *dispositional* and *qualitative aspects*.

One might protest against the introduction of a new notion for it offends against the conceptual economy of the theory. But the theoretical benefits that aspects bring us are well worth the entities. The introduction of aspects complicates the framework, but the complication will be repaid; once aspects will be commanded, a promising ontology emerges. In this section, I will first discuss the metaphysics of aspects. Then I will offer a more precise formulation of the notions of dispositional and qualitative aspects.

Aspects are *ways of being* of properties, or ways properties are. The notion of a way of being that I have in mind traces back to Jerrold Levinson (1978). He claims that “an object’s ways of being are the varied fashion in which it goes the complicate business of existing” (Levinson 1978, 2), but also properties have “ways of being as components” (Levinson 1978, 1). The proposal is that aspects are the varied fashion in which properties go the business of existing. In more familiar terms, aspects can be understood as higher-order properties. That is, aspects are borne by properties. Aspects have three important qualifications, which I will explain in due course: (i) aspects are ontologically lightweight; (ii) aspects ontologically depend on the properties of which they are aspects; (iii) what aspects a property has is metaphysically determined by that property’s nature. Of course, there are several ways of conceiving of aspects. My claim here is not that the proposed conception is the best one. Rather my claim is that the powerful qualities view is best understood according to the conception of aspects I wish to defend in this chapter.

Despite being vague, the term “way of being” conveys the ontological sense of the notion adequately: properties are in some ways or other; these ways are aspects. Thus to say that a property has aspects should not be interpreted literally. Rather it is a convenient shorthand for saying that a property has some ways of being. Unfortunately, the ambiguity is inevitable: it seems that a property has aspects in the same fashion in which a whole is constituted or made of parts. As it will become clear in due course, this is a different conception from the one under scrutiny. Yet if one bears in mind the previous remark—namely that “a property has aspects” is a shorthand—the ambiguity becomes tolerable.

Aspects are available for *almost* everyone. If one rejects properties *tout court*, then aspects go away with them. Someone who thinks that properties do not figure in the inventory of what exists has no place for aspects either. But if one accepts the existence of properties, then she can benefit from the introduction aspects independently from whether properties are thought of as Platonic universals or immanent universals or tropes. The choice between these views rests on independent factors which I shall not explore here.

It is a different story if someone claims that at least some properties *must be* simple. Canonically, a property is simple if it is not constituted by further properties. In contrast, a property is complex if it has other properties as its constituents (Armstrong 1997, 31–33). For example, the property of having a certain charge is simple. In contrast, the property of being a black marble is a complex one, namely it is constituted by the property of being black and the property of being a marble. On a liberal interpretation, one could argue that properties with aspects are complex. Accordingly, if all properties have aspects and properties with aspects are complex, then there are no simple properties. Someone who

thinks of this consequence as problematic will spurn the introduction of aspects. However, there is no reason for supposing that there must be simple properties. For all we know, the world might be fundamentally complex.

Aspects, like properties, are available also for those who think that these entities do not really exist. Even someone who holds that talk of properties is simply a profitable framework to describe the world can benefit from the introduction of aspects.

The notion of an aspect appears to be conceptually primitive. That is, it cannot be explicated in more basic terms. Nor can it be reduced to other familiar ones. One could provide an analysis of aspects in terms of ways of being or higher-order properties. For instance, one might say that α is an aspect of a property P just in case α is a way of being of P. But this is not particularly illuminating.

Another clarification is needed. The claim that all fundamental properties have dispositional and qualitative aspects is not a claim about how many aspects a fundamental property has. While it entails that every fundamental property has at least two aspects, the claim concerns the kinds of aspect that fundamental properties have. The powerful qualities view should be understood as the view that all fundamental properties have two kinds of aspects: dispositional and qualitative. But fundamental properties can have countless aspects. They can have only a qualitative aspect and several dispositional ones, or the other way round. From the armchair, we cannot decide how many aspects a fundamental property has. Whatever number of aspects fundamental properties have, on the proposed view, they are qualitative and dispositional in kind.

One might wonder: what kinds of property have aspects? I will argue that all fundamental properties have some dispositional and qualitative aspects. One might think that it is fairly unproblematic to think of sparse yet non-fundamental properties as having aspects. Here I acknowledge a twofold distinction between sparse and fundamental properties (cf. Schaffer 2004). Sparse properties are those invoked by *all* scientific disciplines that investigate nature. Fundamental properties are those sparse properties that are posited by fundamental physics. However, it is possible that some sparse non-fundamental properties have only either dispositional aspects or qualitative ones. Once again, we cannot assess this possibility from the armchair. In this chapter and the ones to come, I will restrict my attention to fundamental properties.

It might be useful to illustrate a few examples to convey the general idea of aspects. Think of the property of having a certain gravitational mass, a putative fundamental property. According to the proposal, having a certain gravitational mass has some aspects. This is a shorthand for saying that the property of having a certain gravitational mass is in some ways

or other. By having a certain gravitational mass, a bearer has the disposition to generate a gravitational force. Disposing a bearer to generate a gravitational force is an aspect of, or way the property of having a certain gravitational mass is. In more familiar terminology, to dispose a bearer to generate a gravitational force is a higher-order property of having a certain gravitational mass.

Another example. Think of the property of having a certain charge, another putative fundamental property. By having a certain charge, a bearer has the disposition to exert a force in accordance to Coulomb's Laws. This is an aspect of the property of having a certain charge; it is a way this property is. Alternatively, we can say that having a certain charge has the higher-order property of disposing a bearer to exert a force in accordance to Coulomb's Law.

Other examples of aspects are the "basic features" of powers (Molnar 2003; Chapter 2, §2.2.2). For instance, Molnar claims that powers "have an object towards which they are oriented or directed". The object in question is a particular manifestation. This is the so-called "directedness", which is "an essential feature of power properties" (Molnar 2003, 60). It seems plausible to think of the directedness of powers as an aspect: every power is such that it is directed toward a certain manifestation; this is a way every power is. We can say that every power has the aspect, or higher-order property of being directed toward a certain manifestation. Similar considerations can be offered for the other features of powers.

The previous examples can be regarded as paradigmatic examples of aspects of properties. I have not discussed yet the notions of dispositional and qualitative aspects. However, some of the previous examples regard aspects that are intuitively dispositional. But of course intuitions might diverge in other cases. A more precise formulation will give us a criterion for discriminating whether an aspect is dispositional or qualitative. But inevitably room for disagreement will remain. This is perhaps due to the difficulty of finding paradigmatic examples of qualitative aspects. In turn, such a difficulty depends on the generality of the notion of qualitativity. But disagreement over cases does not threaten the main claim that I want to defend in this dissertation, namely that all fundamental properties have dispositional and qualitative aspects.

We must acknowledge another possibility: it may be that not all aspects are either dispositional or qualitative. For example, someone can argue that every instantiated property has the aspect of being instantiated. This is to say that being instantiated is a way every instantiated property is. Granted that this could be a genuine aspect, it is unclear whether being instantiated is a dispositional or qualitative. Here it is not possible to explore the nature of aspects that are neither dispositional nor qualitative. For the purposes of this chapter, two

remarks will suffice: (i) I am not committed to the claim that every aspect is either dispositional or qualitative; (ii) the powerful qualities view is not the view that all fundamental properties have *only* dispositional and qualitative aspects. To put it differently, a powerful quality may have aspects that are neither dispositional nor qualitative. What matters for the truth of the powerful qualities view is that every fundamental properties has essentially some dispositional and qualitative aspects. If a powerful quality has extra aspects that are neither dispositional nor qualitative, then so be it. However, my focus is on the essential aspects of powerful qualities, which I contend are dispositional and qualitative.

I will turn now to explain the qualifications of aspects. As previously said, aspects are higher-order properties according to an ontologically lightweight sense. On the proposed conception, aspects supervene on properties. Since I embrace the standard view that what supervenes does not constitute a genuine addition to being, aspects are lightweight entities (cf. Armstrong 1982, 7; cf. Armstrong 1997, 11–13). Three analogies with more familiar cases may demystify some initial obscurities.

First, consider E. J. Lowe's idea of *manners of existing* (2006). Aspects are akin to Lowe's manners of existing (2006, 44–49). In Lowe's view, properties have a certain ontological form. The ontological form a property is the manner of existing of that property. It is *how* a property exists. Crucially, the manners of existing of properties (and other entities) do not appear in the inventory of what exists. For example, a manner of existing of a property is to be self-identical. According to Lowe, our ontological commitment has to be restricted to that property; being self-identical is simply one of its manners of existing. We can truly predicate of every property that it is self-identical without endorsing the view that every property has the property of being self-identical in a sense that would constitute a genuine addition to being.

Second, consider David Armstrong's distinction between *thin* and *thick particulars*. A thin particular is a particular considered in abstraction from its properties, which are ways that particular is (Armstrong 1997, 123). A thick particular is a particular "taken along with all and only the particular's relational properties" (Armstrong 1997, 124). Consider for example the particular *a* and the property *F* which *a* instantiates. The thin particular is *a* abstracted from *F*; the thick particular is, in Armstrong's view, *a's being F* (1997, 125). According to the proposed conception of aspects, properties are thick: they are in some ways or other. In contrast, aspects are thin: they are ways of being of properties considered in abstraction from the property and its other ways. The analogy with Armstrong's view demands caution: first, there are different ways of understanding the distinction between thick and thin particulars (Dodd 1999); second, an aspects view does not force us to regard

properties as particulars. Universals have ways of being as well as particulars. The choice between these two conceptions is independent from the idea of aspects.

Lastly, think of the standard view of tropes (Williams 1953; Campbell 1990; Simons 1994; Maurin 2002; Hakkarainen and Keinänen 2017). According to it, some tropes are mereologically simple entities that lack any constituents. Yet these simple tropes are individually distinct from each other and primitively resembling to some other ones. These features are not entities that simple tropes have. Rather they are, in Lowe's fashion, "manners of existing": ways in which simple tropes exist (Hakkarainen and Keinänen 2017: 652). According to the standard view, these features supervene on simple tropes. If we adopt the view that what supervenes is no addition to being (e.g. Campbell 1990, 37; Armstrong 1997), features of tropes are "pseudo-additions". To use a metaphor, God's creation of a simple trope T suffices for T being distinct from any other tropes and T being primitively resembling to some other tropes. Significantly, the manners of existing of simple tropes can be abstractedly considered (Campbell 1990, 56–57): in thought, we can select the primitive resemblance of simple tropes T and T* while neglecting T and T* individual distinctness. Of course, the standard view of tropes is not exempt from problems (cf. Daly 1994). However, it is not possible to discuss them here. Also in this case, the proposed conception of aspects does not require to decide between tropes or universals.

Like Lowe's manners of existing and the feature of simple tropes, aspects do not constitute an addition to being with respect to their bearers, which are properties. For example, disposing a bearer to generate a gravitational force is an aspect of the property of having a certain gravitational mass. Once you have the property of having a certain gravitational mass, you get its aspect of disposing a bearer to generate a gravitational force. In slogan form, aspects supervene upon the properties of which they are aspects. To use the creation metaphor again, God needs only to create properties in order for them to have aspects.

One might wonder: why not get rid of properties? Why not conceiving of properties as bundles of aspects? At first glance, a "bundle view" of aspects seems an attractive option. If the role of properties can be exhaustively supplanted by aspects, we could simplify our theory by eliminating the latter. On closer inspection, however, a bundle view is problematic. The challenge is to explain how aspects are bundled together.

A possible strategy is to invoke a relation that plays the "bundling" role. To mirror the case of bundles of properties, someone might appeal to a relation of *compresence* (e.g. Williams 1953; Campbell 1990). Roughly, if two or more properties are compresent, then they occupy the same spatio-temporal location. Then one can stipulate that when some

properties are compresent, they form a bundle (cf. Daly 1994, 259). By adapting the compresence relation to the case of aspects, we can say that if two or more aspects are compresent, then they form a bundle. Despite its initial plausibility, this strategy is unpromising for at least two reasons.

First, we need to accept a primitive compresence relation in our ontology. Thus we get rid of properties by burdening us with relations. This strategy calls in question the parsimony that motivated getting rid of properties in the first place.

Second, a bundle view of aspects faces the notorious Bradley's regress (1893, 31–33; 1935). Let us use Greek letters to denote aspects. The existence of α and β is not sufficient for forming a bundle. The appeal to a compresence relation C is meant to solve this problem by providing a condition for bundle formation. However, the existence of α , β , and C is not sufficient either for the formation of a bundle. In order to form a bundle, α and β must stand in the relation C ; that is, α and β must be compresent. One can introduce another relation C' to relate C with α and β . But the problem is reiterated: the mere existence of C' does not warrant that C , α , and β stand in the relevant relation. A regress arises. If we invoke another relation C'' , the same problem occurs, and so on. There are various strategies to resist Bradley's regress (MacBride 2016). Arguably, these can be tweaked for the case of aspects. Yet the fact that such a view does face a regress makes it, at first glance, conceptually unattractive.

The proposed conception of aspect is preferable for it eschews the regress. To justify this claim, we need to consider the second qualification of aspects. This will clarify the idea that aspects do not supplant properties.

According to the proposed conception, aspects ontologically depend on properties. That is, aspects cannot exist independently from the properties of which they are aspects. This is because aspects are ways of being of a property. If a property ceases to exist, so it is for its aspects. Properties play therefore the role of ontological ground for aspects. One could admit ungrounded aspects in order to get rid of properties, but this would require abandoning the proposed characterisation: if there are no properties, then aspects cannot be ways properties are. Perhaps one could claim that aspects are ways things are. But if so, aspects are properties in disguise.

Ontological dependence is not the only link between properties and aspects. There is a stronger connection that fastens a property and its ways of being. On this proposal, the aspects of a property P obtains *in virtue of* how P is, or P 's nature. To put it differently, how a property is like determines its ways of being. This is the third most important qualification of the proposed conception of aspects. For example, it is in virtue of the nature of charge

that it has the aspects of disposing a bearer to exert and experience a force in accordance to Coulomb's Law is. A friend of essences would say that the aspects of a property are determined by or depend on that property's essence.

To use the terminology of *grounding*, we can say that the aspects of a property are grounded in that property. The notion of grounding in question is less technical than the one discussed in contemporary metaphysical debates (for a general introduction, see Bliss and Trogon 2014). However, it shares with it at least two relevant features.

First, it captures the pre-theoretical sense of the notion of ground. This is the sense in which one entity (or more) obtains (or obtain) in virtue of another (or others). Second, the grounding relation in question captures the ideas that there is a systematic connection between a property and its aspects. It is the nature of a property that metaphysically determines its aspects. For example, it is the nature of charge that determines its aspect of disposing a bearer to produce an electromagnetic force. It is tempting to regard grounding as a metaphysically necessary connection. But this might be mistaken. Thus I shall not be committed to the claim that a property has the aspect it has as a matter of metaphysical necessity (see Leuenberger 2014 for a discussion on grounding and entailment). However, on the proposed conception, a property's nature determines its aspects. Standardly, this entails that such a property has its aspects in every possible world where it exists.

Why accepting that aspects hold in virtue of the properties of which they are aspects? A relation of metaphysical determination between properties and their aspects accounts for their systematic connection. Every instance of charge disposes a bearer to produce an electromagnetic force. In contrast, for example, there is no systematic connection between instances of charge and the shape of their bearers. One could say that the nature of charge includes the disposition to produce an electromagnetic force but not the bestowal of a distinctive shape.

Of course, there are other ways to account for the systematic connection between a property and its aspects. For example, one might claim that laws of nature dictate what aspects a property has. Thus the modal force of the determination between a property and its aspects reflects the modal force of the laws nature. This approach is a live possibility that we are not forced to rule out. At first impression, however, an aspects view that dispenses with laws of nature is more parsimonious. Properties have the aspects they have in virtue of what they are; there is no need to invoke laws to account for their aspects. One might protest that properties cannot do all this work. But a similar objection can be raised against laws. Therefore, it is unclear whether this is an expression of a philosophical prejudice or conceals a substantial argument against this view.

What aspects a property has cannot be determined a priori. Allowing such a possibility would offend against empiricism. The aspects of sparse, or natural properties are to be decided by science. Relatedly, aspects reflect the naturalness of their properties. Thus some aspects are more natural than others. For example, the aspect of disposing a bearer to produce an electromagnetic force is more natural than the aspect of having a certain degree of hue of scarlet. One might wonder whether some aspects are fundamental. But given that aspects ontologically depends on properties, aspects cannot be *absolutely* fundamental. Talk of fundamental aspects is at best a shorthand for referring to the aspects of fundamental properties.

No harm is done in embracing the view that all sparse properties have aspects. One might think that it is reasonable to extend the previous claim to abundant properties. However, there is a looming worry: it is unclear whether for every abundant property A, it is meaningful to say that A has any way of being at all. For example, it is unclear whether negative properties (whose canonical expression involves negation) have any ways of being at all. Suppose to accept the existence of the property of not being self-identical. Is the claim that the property of not being self-identical has a way of being intelligible? Does it make it any sense to say that the property of not being self-identical is in some way or other? Unfortunately, there is no clear answer to these questions. It is therefore wise to avoid the commitment to the claim that all abundant properties have aspects.

A related question arises: do aspects have aspects? One could maintain the view that properties have aspects, aspects have other aspects, and so on. A hierarchy of aspects looks implausible, but it is just unlovely. The proliferation of aspects does not overpopulate our ontology. Recall that aspects are not an ontological addition to being with respect to properties. Whether properties have only first-order aspects or countless many higher-order ones does not burden our ontology. Someone might raise epistemic concerns with respect to this hierarchy of aspects. A view that escapes the charge of implausibility is therefore preferable.

The aspects view I wish to defend here takes only sparse properties to have aspects. We can surely predicate or ascribe characteristics to aspects. But such ascriptions are made true by aspects; they are not made true by other higher-order aspects that aspects have. For example, an aspect of negative charge is disposing particles to produce an electromagnetic force. One could claim that being dispositional is a higher-order aspect of this aspect of negative charge. This is a true ascription, but there is no need to posit another aspect in addition to it. The aspect of disposing particles to produce electromagnetic force is sufficient to ground the truth of the ascription “is dispositional”.

Some other restrictions need to be placed on the kinds of aspect that can be admitted. Conjunctions of positive aspects are unproblematic. These are themselves aspects under two conditions: first, they are conjunctions of aspects that a property has; second, conjunctions of aspects are nothing over and above their conjuncts. Let P be the property with aspects α , β and γ . The conjunction $(\alpha \wedge \beta \wedge \gamma)$ is an aspect of P , but it is not an ontological addition with respect to α , β and γ .

On the contrary, we need to deny that a property P has disjunctive aspects such as $(\alpha \vee \Omega)$, where Ω is not an aspect of P . While that P has “ α or Ω ” is true, there is no corresponding aspect $(\alpha \vee \Omega)$ that P has. Unrestricted disjunctions of aspects have worrisome implications (for an analogy with properties, see Armstrong 1978a, 20). This is a reason for rejecting them. Suppose that P has α but lacks Ω , while Q has Ω but lacks α . The predicate “has α or Ω ” is true for both P and Q . Yet it does not seem quite right to say that P and Q have something in common.

In similar vein, we need to reject negative aspects whose canonical expression involve negation (e.g. “not disposing a bearer to shatter”). As for negative properties, the acceptance of negative aspects leads to implausible consequences (Armstrong 1978a, 23–29). If properties have negative aspects, then they would always resemble for some aspects. For example, suppose that P has α and Q has Ω , but neither P nor Q has β . If negative aspects are accepted, then P has $\neg\beta$ and Q has $\neg\beta$. Properties P and Q would resemble with respect to something that they do not have. This should not be considered as an objective resemblance. The introduction of aspects is extremely serviceable in the analysis of resemblance. The previous qualifications will become relevant in Chapter 5 where I will discuss this topic in detail. For the sake of completeness, however, I introduced them here.

One might ask: are aspects tropes or universals? The answer depends on one’s conception of properties. If properties are tropes, then so it is for their aspects; if properties are universals, then their aspects are universals. It seems to me that such a qualification is not essential: one might accept that properties have aspects without being committed to the claim that aspects are universals or tropes. It is not possible to adjudicate the most adequate view here. But it is sufficient to note that the decision between particulars and universals rests on independent considerations.

We are now in position to reformulate the powerful qualities view in light of the proposed notion of an aspect. But first let us consider another example to summarise the proposal. Think of the property of having a certain charge. According to the view discussed so far, having a certain charge has some aspects. This is to say that the property of having a certain charge is in some ways or other. An aspect of this property is disposing a bearer to

produce an electromagnetic force. This is a way having a certain charge is. On the proposed view, this aspect is metaphysically determined, or grounded in the nature of having a charge is. Yet the aspect of disposing a bearer to produce an electromagnetic force is not an ontological addition to being with respect to the property of having a certain charge. Once we have a property of having a certain charge, we get its aspects for free.

3.2.2 *Qualitative and Dispositional Aspects*

The powerful qualities theorist is committed to the thesis that all fundamental properties are essentially dispositional-and-qualitative. By appealing to the notion of aspects, we can clarify this thesis. A powerful quality is a property that has a dual nature (Martin and Heil 1999, 45–56). As Martin puts it, “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (2008, 44). In this section, I will argue that we can make sense of this claim by saying that a powerful quality is a property having dispositional and qualitative aspects. Thus the powerful qualities view can be regarded as the view that all fundamental properties have essentially dispositional and qualitative aspects.

As a preliminary remark, the claim that all fundamental properties have essentially dispositional and qualitative aspects regards the kinds of aspect they have rather than their number. Fundamental properties might have countless aspects; the proposed interpretation entails only that a fundamental property has at least a dispositional aspect and a qualitative one. It cannot be decided a priori how many dispositional and qualitative aspects a fundamental properties have. It is possible that some fundamental properties have a dominant majority of dispositional aspects and only a minority of qualitative or the other way round. It is also possible that some fundamental properties have the same number of dispositional and qualitative aspects. The powerful qualities view is compatible with either possibility.

Let us begin with the formulation of dispositional aspects. This notion is meant to capture the idea that by having a property, an object possesses a “particular dispositionality” (Martin 2008, 44). This is to say that by possessing a certain powerful quality, a bearer has some powers. I shall propose to formulate the relation between a property and dispositional aspects as follows.

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

Dispositional Aspect is not a reductive analysis of dispositionality. More modestly, it clarifies the relation between dispositional aspects of a property and the possession of certain powers, or dispositions that a bearer of that property has. For example, charge has some dispositional aspects just in case every charged thing possesses some powers. This seems to be the case: every charged thing has, for example, the power to produce an electromagnetic force in various circumstances.

Another way to grasp the notion of a dispositional aspect is in terms of the bestowal upon a bearer of some powers by a property. This is a shorthand for saying that a bearer has some powers by having that property. The “bestowal” of some powers is that property’s dispositional aspect. However, such an understanding is potentially confusing. It erroneously implies that properties bestow upon particulars some powers in the same fashion in which monarchs bestow the title of knighthood to some remarkable individuals. But the bestowal of a monarch is an action that properties cannot perform. The formulation of *Dispositional Aspect* is less ambiguous, though it captures the same idea.

The notion of a qualitative aspect captures the idea that by having a property, an object has a “particular qualitative character” (Martin 2008, 44). This is to say that the possession of a powerful quality contributes, in some sense, to how a bearer is occurrently like. I propose to formulate the notion of a qualitative aspect as follows.

Qualitative Aspect: a property P has some qualitative aspects if and only if the possession of P qualitatively contributes to the make-up of every bearer of P.

Qualities are a matter of how something is like. They contribute to how a thing is, or its “make-up. This term is to be understood in a loose sense: it is meant to capture the various ways the possession of a property affects the qualitativity of a bearer. For example, Heil says “qualities are ways things are” (2010, 70). In similar vein, Henry Taylor proposes that “categorical/qualitative properties essentially contribute to the makeup of how an object is now” (2013, 94). Consider once again the property of having a certain charge. According to this formulation, if charge has a qualitative aspect, then it qualitatively contributes to the make-up of every charged thing. A plausible candidate for being a qualitative aspect of charge is having a certain quantity of charge that can be measured in coulombs. This is a qualitative contribution of charge to the make-up of charged things. Here I acknowledge that the notion of “qualitative contribution” is ambiguous. For present purposes, an intuitive grasp of what a qualitative contribution might be is sufficient. We can think of the qualitative contribution as the idea that a bearer is in some way or other by virtue of having a property.

Like *Dispositional Aspect*, the formulation of *Qualitative Aspect* is not a reductive analysis of qualitativity. More modestly, it clarifies the relation between a property's qualitative aspect and its possession by a bearer.

Equipped with dispositional and qualitative aspects, we can now define a powerful quality. The aim here is to regiment the claim that “every property has a dual nature: in virtue of possessing a property, an object possesses a particular dispositionality and a particular qualitative character” (Martin and Heil 1999: 45–46). I propose the following definition.

Powerful Quality: a property P is a powerful quality if and only if (1) P has some dispositional aspects and (2) P has some qualitative aspects.

The definition of *Powerful Quality* brings us some important benefits. First, it allows us to interpret the powerful qualities view as the view that all fundamental properties have essentially dispositional and qualitative aspects. If this is true, then a putative fundamental property such as charge have some dispositional and qualitative aspects. According to the proposed formulations, this means that every charged particular has some powers by having this property and has some qualitative aspects that contribute to its make-up. Second, it represents an improvement in precision with respect to the standard characterisation of powerful qualities. However, that most significant merit that the introduction of aspects brings us concern the Identity Theory of powers, which is the canonical version of powerful qualities. As its name implies, the Identity Theory is committed to a controversial identity claim between a property's dispositionality and its qualitativity. In the literature, the Identity Theory faces the charge of contradiction (e.g. Armstrong 2005, 315; Bird 2007b, 514; Barker 2013, 649). This obfuscates the merits of a conception of powerful qualities. We should therefore explore an alternative account. The notions of dispositional and qualitative aspects serve the purpose well. In the next section, I will first present the Identity Theory. Then I will discuss three prima facie promising ways to disambiguate it by appealing to a distinction between two senses of dispositionality and qualitativity.

3.3 The Identity Theory of Powers

3.3.1 A Surprising Identity

In its canonical version, the powerful qualities view is committed to a distinctive identity claim between a property's dispositional and its qualitative. This version is known as the *Identity Theory* of powers (Heil 2003; 111).⁸

The central tenet of the Identity Theory is that “the qualitative and dispositional are identical with one another and with the unitary intrinsic property itself” (Martin 2008, 65). This claim has been regimented by Heil as follows:

If P is an intrinsic property of a concrete object, P is simultaneously dispositional and qualitative; P's dispositional and qualitative are not aspects or properties of P; P's dispositional, Pd, is P's qualitative, Pq, and each of these is P: Pd = Pq = P. (Heil 2003, 111. Original emphasis.)

For clarity's sake, let us focus on the relevant part of this claim. We can reformulate it follows.

Identity: a property P's dispositional is P's qualitative, and each of these is P.

In the literature, *Identity* faces the charge of contradiction. For example, David Armstrong says:

I confess that I find this [*Identity*] totally incredible. If anything is a category mistake, it is a category mistake to identify a quality – a categorical property – and a power, essentially something that points to a certain effect. (Armstrong 2005, 315)

In same vein, Stephen Barker claims that the Identity Theory “looks incoherent” (2013, 649). Similarly, Alexander Bird argues that “a property cannot be both a potency and a categorical property” (2007b, 514). Since the identity theorist does not think of her view as incoherent, *Identity* must be understood in a different sense. As it happens, identity theorists hint at different readings of *Identity*. This leaves unclear which one is the most adequate. In what follows, I will discuss three plausible interpretations of *Identity* in light of a distinction

⁸ Others that endorse that Identity Theory are Martin (2008), Strawson (2008a), Jacobs (2011), Taylor (2013), Carruth (2016), Jaworski (2016).

between two senses of dispositionality and qualitativity. Of course, the proposed readings do not exhaust the interpretative options. As I will explain in due course, the proposed readings are rather well-suited to capturing the spirit of the Identity Theory.

The idea that there are various ways of making sense of *Identity* presupposes the coherence of this claim. So let us begin by defusing the charge of contradiction. This accusation hangs on a characterisation of the qualitative as non-dispositional: of course, if we define the qualitative as non-dispositional, *Identity* is contradictory. But the identity theorist simply does not conceive of the qualitative in opposing terms to the dispositional. Rather they take qualitativity to be a matter of how a thing is occurrently like. For example, Heil says that “qualities are categorical; qualities are here and now, actual, not merely potential, features of the objects of which they are qualities” (2012, 59). Elsewhere, he claims that “ways things *are* are qualities” (Heil 2010, 70). If we understand qualitativity as a matter of how something is occurrently like, then there is no contradiction in claiming that the qualities of a thing are identical with its powers.

While the previous understanding of qualitativity escapes the charge of contradiction, the question of whether it is possible to characterise the notion of qualitativity in more informative terms remains (see Taylor 2018 for various interpretations). But, as Ingthorsson (2013) notes, this task does not burden only the identity theorists. Friends of Categoricalism face it as well. As such, the lack of a precise notion of qualitativity does not represent a strong objection against the Identity Theory.

The previous clarification frees the Identity Theory from the charge of contradiction. However, it remains the question of how to understand the notions of dispositionality and qualitativity in *Identity*. Martin and Heil, who are leading proponents of this view, hint at different readings. For example, they say:

We hold that every property has a dual nature: in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character. [...] A ball’s sphericity, for instance, gives it (in concert with the ball’s other properties) a distinctive appearance and disposes it in particular ways. (It will roll, for instance, and reflect light in a certain pattern.) (Martin and Heil 1999, 45–46)

A property’s dispositionality and qualitativity must be thought of as unrealizable limits for different ways of being of that property. (Martin and Heil 1999, 46–47)

The previous passages strongly suggest that qualitativity and dispositionality are ontological notions: they concern the nature of certain properties, or how they are. However, other remarks imply a conceptual reading of the notions of dispositionality and qualitativity. For example, Martin and Heil also claim:

The dispositional and the qualitative are [...] simply different ways of representing the selfsame property [...] what is dispositional and what is qualitative are one and the same property differently considered: considered as what the property exhibits of its nature, and considered as what the property is directive and selective for as its manifestations. (Martin and Heil 1999, 47)

Crudely speaking, in this sense, dispositionality and qualitativity are ways of regarding a property. An immediate question arises: what is the most adequate reading of *Identity*? The ontological and conceptual readings of *Identity* are clearly distinct. The distinction reveals a number of interesting possibilities: some views can be committed to one sense but not the other, while others can endorse both of them (I believe this is Martin's and Heil's view). Relatedly, some objections might target only one reading but not the other. The distinction between these two senses of *Identity* also improves the precision of the view. These are good reasons to examine it further. I shall therefore propose to take seriously the idea that there are two senses in which dispositionality and qualitativity can be understood: according to an *ontological sense*, dispositionality and qualitativity are *ways of being* of a property; according to a *conceptual sense*, dispositionality and qualitativity are *ways of considering* a property. In light of such a distinction, I will discuss three plausible readings of *Identity*. Dispositional and qualitative aspects will prove extremely serviceable in this task. However, it is useful to begin by considering the motivations for adopting *Identity* in the first place.

3.3.2 *Inseparability*

The identity theorist holds that the powerful qualities view is not a conjunctive view of properties. It is tempting to think of a powerful quality as a conjunction or “compound” of dispositional and qualitative parts: this is a natural way of interpreting the claim that properties are dispositional and qualitative (an example of this view has been offered by Taylor 2018). The identity of a property's dispositionality and its qualitativity is the most straightforward strategy to block this temptation: if the dispositionality and qualitativity of a property are identical to each other and the property itself, then a property cannot be a compound of them. This is not to say that a “compound” view is impossible (e.g. Taylor

2018); simply, it is a different view from the Identity Theory (I will discuss a compound view of powerful qualities in Chapter 4).

However, the identity theorist also claims that we can regard the same unitary property in different ways—as the conceptual reading of *Identity* suggests. In doing so, we engage in a process of abstraction: we selectively consider a property according to one of its features while neglecting other ones (Martin 2008, 134–136). This idea echoes the Lockean notion of partial consideration. We can partially consider the same property as a power or quality in the same fashion in which we can regard the duck-rabbit ambiguous figure as a duck or rabbit (Martin 2008, 65–68). Thus the distinction between dispositional and qualitative is possible only in thought. In contrast, there is no real distinction in reality between a property's dispositional and its qualitative. Here scholastic philosophers would say that there is a *distinction of reason* between dispositional and qualitative, but not a *real distinction*.

In contemporary terms, a distinction of reason is a *conceptual distinction* or a *distinction in description*. Thus distinctions of reasons exist only “in our thought” (Descartes 1645–46, 3.280–1). For instance, we can describe a triangle in terms of its sides or angles. The distinction between triangularity and trilaterality is conceptual in the sense that triangularity and trilaterality involve different concepts: the former is a matter of angles; the latter is a matter of sides. In contrast, a *real distinction* exists “outside our thought” (ibid). Namely, it concerns things that can exist separately in reality (cf. Strawson 2008a, 271). For example, trilateral and triangular objects cannot exist apart in reality; in contrast, ravens and desks can. Therefore, there is a real distinction between ravens and desks.

A *distinction of reason* is compatible with inseparability in reality. Consider a pyramidal sculpture. We cannot separate the shape from the sculpture in reality. Any attempt would mean the destruction of the sculpture. However, in our thought, we can separate the shape from the sculpture.

In similar fashion, a powerful quality's dispositional and its qualitative “cannot be prised apart” in reality (Martin and Heil 1999, 46–47; cf. Heil 2003, 247). The division between dispositional and qualitative occurs in conception only, namely it is the product of partially considering a property. So it appears that the identity theorist endorses two distinctive claims: first, a property's dispositional and its qualitative are inseparable in reality; second, we can consider the same property as a power or quality. We can reformulate these claims more precisely as follows:

Inseparability: the dispositionality and qualitativity of every sparse property cannot be separated in reality.

Partial Consideration: every sparse property can be considered as dispositional or qualitative.

This way of characterising *Inseparability* and *Partial Consideration* is not to be ascribed to any identity theorist in particular. Yet it captures accurately the commitments of an advocate of the Identity Theory. We have to recall that the Identity Theory is a thesis about the nature of fundamental properties. However, the considerations and examples invoked to motivate *Inseparability* and *Partial Consideration* strongly suggest that at least these claims concern sparse yet non-fundamental properties. The restriction on sparse properties is also necessary to avoid some obvious counterexamples. An abundant, complex property whose constituents are distinct powers and qualities would be a counterexample to *Inseparability*. If logical properties such as that of being self-identical were neither sparse nor dispositional or qualitative, then they would represent a counterexample to *Partial Consideration*.

According to what has been discussed so far, the identity theorist appears to be committed to three distinct claims: *Identity*, *Inseparability* and *Partial Consideration*. In addition to these claims, she also endorses the powerful qualities view: the thesis that all fundamental properties are essentially dispositional-and-qualitative. Having clarified the motivations for the adoption of *Identity*, I will now turn to discuss the two senses of dispositionality and qualitativity.

3.3.3 *Conceptual Identity*

It is convenient to begin with the conceptual sense of dispositionality and qualitativity. In this sense, dispositionality and qualitativity are best understood as *ways of considering* a property. As Heil puts it, in this sense “a property’s dispositionality and its qualitativity are, as Locke might have put it, the selfsame property differently considered” (2003, 112).

There are at least two distinct interpretations of the idea of ways of considering a property. Accordingly, we can formulate two versions of *Identity* in the conceptual sense. On one interpretation, *Identity* is a claim about the ways in which we can conceptualize the same property. Let us call this interpretation *Identity_c*.

Identity_c: the dispositional way of conceptualizing a property P and the qualitative way of conceptualizing P are ways of conceptualizing one and the same property P.

Here the details of the dispositional and qualitative ways of conceptualizing a property are unimportant. For present purposes, it is sufficient to bear in mind that they are mental acts of thinking of a property as a power or quality. For example, the dispositional way of conceptualizing charge is a way of conceiving of charge as the power to produce an electromagnetic force; the qualitative way of conceptualizing charge is a way of thinking of charge as the quality of having a certain quantity of coulombs. There can be many ways of dispositionally or qualitatively conceptualizing the same property. For example, we can think of a multi-track power in accordance with each of its manifestations in a specific circumstance. Each of these ways of thinking of a multi-track power is a dispositional way of conceptualizing it. Thus *Identity_c* should not be interpreted as the claim there is only one way of dispositionally or qualitatively conceptualizing a certain property. In *Identity_c*, the identity in question is analogous to the claim that we can perceive in different ways the same ambiguous figure. For example, the duck-perception and the rabbit-perception are distinct ways of perceiving the same duck-rabbit illustration. *Identity_c* is therefore a claim about the sameness of reference of the dispositional and qualitative ways of conceptualizing.

According to another interpretation, dispositionality and qualitativity can be understood as descriptions of a property. *Identity* can be formulated as *Identity_a*, which can be regarded as the linguistic counterpart of *Identity_c*. In this case, the identity in question has to do with the sameness of the reference of the dispositional and qualitative descriptions of a property.

Identity_a: the dispositional description of a property P and the qualitative description of P denote one and the same property P.

Plausibly, a dispositional description of a property involves dispositional locutions or predicates such as “is disposed to ... when ...” or “has the disposition to ... when ...” (Bird 2007a, p.20) However, a dispositional description of a property may also involve covert dispositional predicates or locutions, namely terms that do not explicitly refer to a disposition and its manifestation. An example of a covert dispositional term is “fragility”, which corresponds to the “disposition to shatter when struck” (ibid.). In contrast, we can think of a qualitative description as one that does not involve covert or overt dispositional locutions. For example, a dispositional description of a diamond’s hardness “is the diamond’s

disposition to scratch glass when raked across its surface”; a qualitative description is “the diamond’s tetrahedral arrangement of carbon atoms” (cf. Jaworski, p. 54). The identity between dispositional and qualitative descriptions is analogous with the property is analogous to the identity between “The Morning Star” and “The Evening Star” with the planet Venus.

The interpretation of *Identity* as *Identity_d* is suggested by William Jaworski, who writes:

The identity theory of powers claims that one and the same property plays a variety of theoretical roles which we express using different vocabularies. Sometimes we use a dispositional vocabulary, other times we use a nondispositional one. [...] According to the identity theory, though, these vocabularies describe the very same properties; they just bring out the different theoretical roles these properties play. (Jaworski 2016, 54)

As for the ways of conceptualizing a property, *Identity_d* should not be interpreted as suggesting that there is only one dispositional or qualitative description of a property.

The identity in *Identity_d* is analogous to the identity between “The Morning Star” and “The Evening Star” with the planet Venus. These ways of picking out Venus are identical in the sense of having the same referent. The same can be said for the notions of qualitativity and dispositionality in *Identity_d*.

On closer inspection, the conceptual sense of *Identity* reveals two distinct claims: *Identity_c* and *Identity_d*. I shall postpone the discussion of their plausibility to §3.4. Here few remarks will suffice. My claim is not that identity theorist should fix on either *Identity_c* or *Identity_d*. Nor is that *Identity_c* and *Identity_d* are the best ways of interpreting the conceptual sense of *Identity*. My claim is weaker, namely that *Identity_c* or *Identity_d* are plausible readings which capture the conceptual sense of *Identity*. Crucially, there is no contradiction in claiming that we can conceptualize one and the same property in different ways. Similarly, there is no contradiction in claiming that we can describe one and the same property using different vocabularies. *Identity_c* and *Identity_d* clarify how the identity theorist escapes the charge of contradiction. Therefore, the distinction represents a beneficial improvement in precision of the Identity Theory.

3.3.4 *Ontological Identity*

In the ontological sense, I submit that dispositional and qualitativity are best regarded *ways of being* of properties. As Martin and Heil suggest it, “a property’s dispositional and qualitativity must be thought of as unrealizable limits for different *ways of being* of that property (1999, 46–47).

The notions of dispositional and qualitative aspects (§3.2) are extremely serviceable to clarify the ontological sense of *Identity*. For the sake of brevity, I shall not repeat the characterisation of aspects in its entirety. It is sufficient to recall that aspects are ways of being of properties. In more familiar terms, they can be understood as higher-order properties with a few important qualifications: (i) aspects are lightweight higher-order properties; (ii) aspects ontologically depend on the properties of which they are aspects; and (iii) it is the nature of a property that determines its aspects.

According to this proposal, *Identity* in the ontological sense can be regarded as a claim about the relation between a property’s dispositional and qualitative aspects and the property itself. Since aspects and properties are different kinds of entity, we cannot appeal to numerical identity to formulate the ontological sense of *Identity*. A more promising formulation which captures the ontological sense of dispositional and qualitativity is the following one.

Identity_o: there is no real distinction between a property P’s dispositional aspect and P’s qualitative aspect, and each of these aspects belongs to one and the same property P.⁹

It is worth noting that *Identity_o* is somewhat different from the original *Identity* claim. This is because aspects are lightweight entities. So they cannot be the relata of the standard numerical identity relation. An opponent could argue that *Identity_o* would be untenable if this were a claim about the numerical identity of aspects. One way to preserve the spirit of the Identity Theory is to say that there is no real, ontologically robust distinction between a property dispositional aspect and its qualitative one. This interpretation captures the identity theorist’s claim that a property’s dispositional and its qualitativity are *not* ontic, ontologically robust higher-order properties (Heil 2003, 118–119). An example will clarify. Consider the property of having a certain mass. According to *Identity_o*, the dispositional aspect of disposing a bearer to produce a gravitational force is not really distinct from the

⁹ Recall that a powerful quality may have more than one dispositional and qualitative aspects. Of course, *Identity_o* can be understood as a claim about all aspects that a powerful quality has.

aspect of conferring a bearer a certain quantity of matter. Presumably, the advocate of *Identity_o* would argue that the distinction between these aspects of mass is in thought only and, as such, it does not demarcate a distinction in reality.

The second part of *Identity_o* concerns the relation between a property's aspects and the property itself. Also in this case, the plausibility of *Identity_o* requires us to amend the numerical identity between the aspects and the property. Here we have various options. One way to preserve the spirit of the original *Identity* is to hold that the dispositional and qualitative ways of being of a property belong to a single and unitary property. Such an interpretation allows us to capture the identity theorist's claim that a powerful quality is not a conjunctive property of some sort (cf. Heil 2003, 118–119).

It seems to me that *Identity_o* is well-suited to capturing the ontological reading of *Identity*. Recall that to say that a property has dispositional and qualitative aspects should not be taken literally. Rather it is a convenient shorthand for saying that “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (Martin 2008, 44).

Inspection of *Identity* reveals three distinct readings: *Identity_c* and *Identity_d* are conceptual claims about the ways we can consider properties; *Identity_o* is an ontological claim about the nature, or ways of being of properties. The identity theorist is now in a position to elucidate her view.

3.4 Toward a Dual-Aspect Account of Powerful Qualities

3.4.1 *Is Qualitativity identical with Dispositionality?*

An immediate question arises: are *Identity_c*, *Identity_d*, and *Identity_o* plausible readings of *Identity*? In this section I will argue that even if they were not, we would not be forced to abandon the powerful qualities view *tout court*. However, my claim is not that if *Identity_c*, *Identity_d*, and *Identity_o* are false or ill-suited to capturing the distinctive claim the identity theorist wishes to make, then *Identity* should be rejected. There may be other readings of *Identity*. My aim is not to show the falsity of the Identity Theory, but that we can articulate an account of powerful qualities that is not committed to any of the suggested readings of *Identity*. The claim is therefore conditional: if *Identity_c*, *Identity_d*, and *Identity_o* were false, it would be still possible to hold an account of fundamental powerful qualities. Aspects elucidate such a possibility.

3.3.5 *No Asymmetry*

To begin with, let us focus on the plausibility of *Identity_c* and *Identity_d*. Both readings involve the conceptual sense of dispositionality and qualitativity. This warrants a unified treatment. Against these interpretations, one could argue that they are compatible with ontological views that privilege either the dispositional over the categorical or the other way round. By contrast, the powerful qualities theorist is committed to the claim that there is “no asymmetry” (Martin and Heil 1999, 46) between a property’s dispositionality and its qualitativity; they are “equally basic and irreducible” (ibid.) and there is “no direction of priority or dependence” among them (ibid.). The identity theorist should preserve this idea. By contrast, the previous possibility threatens the commitment to the equal basicness of dispositionality and qualitativity.

Suppose that “charge’s dispositionality” is a description of charge in terms of the disposition to produce an electromagnetic force, while “charge’s qualitativity” is a description of charge in terms of quantity of coulombs. A categoricalist, who holds that all fundamental properties are qualities, can accept that “charge’s dispositionality” and “charge’s qualitativity” denote the same property of charge and yet she can maintain that charge’s dispositionality depends on its qualitativity. Similarly, a dispositionalist, who maintains that all fundamental properties are powers, can accept the sameness of reference of “charge’s dispositionality” and “charge’s qualitativity” while denying that the dispositionality and qualitativity of charge are equally basic. *Identity_c* and *Identity_d* cannot block these views because they are conceptual claims. In contrast, the claim that a property’s dispositionality and qualitativity are equally basic is an ontological claim. Thus to preserve the equal basicness, or no asymmetry of dispositionality and qualitativity, the identity theorist ought to look for an ontological reading of *Identity*.

There is a related problem with *Identity_c* and *Identity_d*. If the Identity Theory were *only* a claim about the ways of conceptualizing or describing certain properties, then it would be explanatorily weaker than its main rivals: Dispositionalism and Categoricalism. Albeit contentious, these doctrines offer a positive account about the nature of fundamental properties. Thus Dispositionalism and Categoricalism provide us with an ontological ground for the fundamental properties of our world. In contrast, *Identity_c* and *Identity_d* are silent concerning the nature of fundamental properties. In order to vindicate the superiority of the Identity Theory as compared to Dispositionalism and Categoricalism, one must embrace an ontological reading of *Identity*. However, also *Identity_o* faces criticism.

3.3.3 *Is There a Real Distinction between Aspects?*

Identity_o is a more promising option for it captures the ontological sense of dispositionality and qualitativity. Recall that the notion of a dispositional aspect captures the core idea of dispositionality, which is a matter of the powers a thing has by virtue of having a certain property. The notion of a qualitative aspect conveys the core idea of qualitativity, which is a matter of how a thing is like. By embracing *Identity_o*, we capture the idea that the Identity Theory is an ontological claim about the nature of properties. Relatedly, we preserve the distinctive commitment to the idea that there is no real distinction between a property's dispositionality and its qualitativity. However, also *Identity_o* faces an objection.

A possible argument goes as follows. By virtue of a property P's dispositional aspect, there is a power or cluster of powers that every bearer of P possesses (note that this objection does not require the adoption of any substantial view about the "by virtue of relation" between a property and its aspects). In contrast, there is no power or cluster of powers that every bearer of P possesses by virtue of P's qualitative aspects. Therefore, dispositional and qualitative aspects are distinct. To illustrate this argument, consider the following example. Suppose that the property of having a certain mass is a powerful quality. By virtue of a dispositional aspect of having a certain mass, a particle has the power to generate gravitational force. In contrast, there is no power that the particle has by virtue of a qualitative aspect of mass such that of having a certain quantity of matter. The opponent of *Identity_o* would claim that this is just a qualitative contribution of the property of having a certain mass to the occurrent make-up of the particle.

The argument against *Identity_o* seems to be compelling. However, the identity theorist could respond, for example, that the distinction between these aspects is in thought only. As such, having a certain quantity of matter is not really distinct from the aspect of disposing a bearer to generate a gravitational force. To my knowledge, no identity theorist has explicitly advocated *Identity_o*. It is therefore unclear whether the identity theorist would adopt this strategy to resist the previous objection. Since it is not my aim to show the falsity of *Identity_o*, I concede that there might be a way to salvage the claim that there is no real distinction between a property's dispositional aspects and its qualitative ones. It is worth repeating that my aim in this section is different, namely to show that it is possible to articulate an account of powerful qualities that is not committed to any of the suggested readings of *Identity*. Thus if each of the proposed readings of *Identity* were to fail, it would be still possible to endorse an account of fundamental powerful qualities. This is good news for those who think that the previous argument establishes the falsity of *Identity_o*.

Of course, the identity theorist could resist the previous objections against *Identity_c*, *Identity_d*, and *Identity_o* by claiming that the opponent failed to understand *Identity*. This strategy is always available, but not particularly insightful. So let us suppose, for the sake of the argument, that the opponent is right, namely that *Identity_c*, *Identity_d*, and *Identity_o* are plausible interpretations of *Identity* but ill-suited for its tenability. Shall we abandon the powerful qualities view? It does not seem so. The introduction of dispositional and qualitative aspects paves the way toward a novel account that renounces *Identity*.

3.3.4 *Towards an Alternative Account of Powerful Qualities*

The view that the nature of every fundamental property is essentially qualitative-and-dispositional is independent from any of the suggested readings of *Identity*. Thus it is possible to endorse the powerful qualities view while renouncing *Identity*. Such a possibility clears the way to a more promising account of powerful qualities. I shall explore this alternative view in detail in Chapter 4. But let us proceed with order.

Call *Powerful Qualities View* the thesis that all fundamental properties are essentially dispositional-and-qualitative. The independence of *Powerful Qualities View* and *Identity_c* is evident: the nature of fundamental properties does not depend on the ways in which we conceptualize them. Similarly, the ways in which we conceptualize fundamental properties do not depend on their nature (though the former might be informed by the latter). There is no contradiction in accepting *Powerful Qualities View* while denying *Identity_c*. Likewise, there is no contradiction in embracing *Identity_c* while denying *Powerful Qualities View*. Also *Identity_d* and *Powerful Qualities View* are independent: someone can accept that we have different ways of describing one and the same property while denying that all fundamental properties are essentially dispositional-and-qualitative. Alternatively, someone may endorse *Powerful Qualities View* while rejecting *Identity_d* on the grounds, for example, that the referents of dispositional and qualitative descriptions are different. None of these combinations faces a contradiction.

Lastly, *Powerful Qualities View* is independent from *Identity_o*. The former can be regarded as the claim that all fundamental properties have essentially dispositional and qualitative aspects (§3.2.2). This claim neither entails nor depends on the identity of the aspects of fundamental properties. That is, it is possible to maintain that all fundamental properties have essentially dispositional and qualitative aspects without being committed to their identity. Of course, the opposite does not hold: *Identity_o* implies that (sparse) properties have dispositional and qualitative aspects.

Overall, *Powerful Qualities View* is independent from any of the proposed readings of *Identity*. This is good news for *Identity_c*, *Identity_d* and *Identity_o* were false, it would be still possible to hold that all fundamental properties are powerful qualities.

It is worth noting that *Identity* is also independent from the other two claims that powerful qualities theorists embrace: *Inseparability* (§3.3.2) and *Partial Consideration* (§3.1.1).

Inseparability: the dispositionality and qualitativity of every sparse property cannot be separated in reality.

Partial Consideration: every sparse property can be considered as dispositional or qualitative.

In *Inseparability*, we can replace dispositionality and qualitativity with dispositional and qualitative aspects. The substitution is legitimate for *Inseparability* is a claim about the ways a property is. Now we can observe that the inseparability of dispositional and qualitative aspects does not depend on their identity. Namely, it is possible to adopt *Inseparability* without embracing *Identity_o*. An identity relation is the strongest way to tie the aspects of a property together, but it is not the sole strategy. For example, one can argue that aspects of a property are inseparable in virtue of some laws of nature or as a matter of brute fact. It is not my aim to adjudicate between these options. For purposes of this chapter, it is sufficient to note that we can endorse *Inseparability* while denying *Identity_o* without facing any contradiction (I will return to this topic in Chapter 4, §4.3.3).

Partial Consideration is a claim about the ways in which we can consider a property. It is therefore analogous to *Identity_c* and *Identity_d*. I have already argued that these claims are compatible with different views about the nature of fundamental properties. For example, both the categoricalist and the dispositionalist can hold *Identity_c* and *Identity_d* and yet they have opposing views about the nature of fundamental properties. This means that *Partial Consideration* is independent from *Identity_o*. Thus we can embrace *Partial Consideration* and *Powerful Qualities View* while renouncing *Identity_o*.

The way towards an alternative account of powerful qualities is now clear: we can abandon *Identity* and yet embrace *Powerful Qualities View*, *Inseparability* and *Partial Consideration*. A detailed examination of such an account will be the focus of the chapters to come. The notions of dispositional and qualitative aspects will play a central role in

articulating this view. For this reason, I will call it “Dual-Aspect Account” of powerful qualities.

Let me conclude with a summary of this chapter. In §3.1 I introduced the powerful qualities view as a superior account with respect to Dispositionalism and Categoricalism. There I discussed three possible arguments against ontologies that take all fundamental properties to be pure powers and pure qualities. In §3.2 I illustrated in detail the novel notion of an *aspect* of a property. The introduction of aspects is extremely serviceable to formulate the powerful qualities view. It is in fact possible to regard it as the thesis that all fundamental properties have essentially dispositional and qualitative aspects. Then in §3.3 I discussed the canonical version of powerful qualities view: the Identity Theory of powers. In the literature, the Identity Theory faces serious criticism due to a contentious identity claim between a property’s dispositionality and its qualitativity. To disambiguate it, I proposed a distinction between two senses of the notions of dispositionality and qualitativity. I then discussed three possible ways of reformulating the identity claim in light of such a distinction. I argued that these readings free the Identity Theory from some initial obscurities. However, in §3.4, I offered some consideration against each of them. I concluded that even if the identity claim were to fail in any of the suggested readings, it would be possible to maintain a conception of fundamental powerful qualities.

CHAPTER 4

A DUAL-ASPECT ACCOUNT OF PROPERTIES

Metaphysics is not governed by science. But it must be informed by science, since it must not involve claims about the world that have been empirically refuted. But while metaphysics is constrained by science, it also extends past science to engage with the nature of parts of the world that science ignores or presupposes, because it involves speculative theses and assumptions that are either unnoticed, ignored or simply assumed as obviously true in scientific theorizing. (Paul 2012, 222)

The most straightforward test of an ontological thesis is its overall power to its competitors: which thesis best accounts for features of the world we encounter in science and in everyday life? (Heil 2003, 128)

4.1 A Two-Category Ontology

4.1.1 *Preliminary Remarks*

According to the Identity Theory, all fundamental properties of our world are essentially qualitative and dispositional, or powerful qualities. Two main motivations underlie this view: first, its superiority over Dispositionalism and Categoricalism (Chapter 2); second, the belief that a satisfactory ontology of fundamental properties should not separate the dispositional and the qualitative.

The identity theorist contends that we need to give an account of what things are disposed to do in certain circumstances *and* how things are like independently from what they do. For example, we have to account for the fact that negatively charged particles generate a repulsive force when they interact with other negatively charged particles and yet having a negative charge is a matter of how a particle is like—independently from whether or not it is manifesting any repulsive force.

In Chapter 3, I illustrate the Identity Theory as the view committed to the following claims:

Powerful Qualities View: all fundamental properties are essentially dispositional-and-qualitative, or powerful qualities.

Partial Consideration: every sparse property can be considered as dispositional or qualitative.

Inseparability: the dispositional and qualitativity of every sparse property cannot be separated in reality.

Identity: a property P's dispositionality is P's qualitativity, and each of these is P.

In the same chapter, I discussed three plausible interpretations of *Identity*: *Identity_c*, *Identity_d*, and *Identity_o*. These are formulated as follows.¹⁰

Identity_c: the dispositional way of conceptualizing a property P and the qualitative way of conceptualizing P are ways of conceptualizing one and the same property P.

Identity_d: the dispositional description of a property P and the qualitative description of P denote one and the same property P.

Identity_o: there is no real distinction between a property P's dispositional aspect and P's qualitative aspect, and each of these aspects belongs to one and the same property P.

However, I argued that each of these reading faces challenging objections. We should therefore explore an account of powerful qualities that renounces *Identity*. I concluded Chapter 3 by showing how the independence of *Identity*, in any of the above readings, from *Powerful Qualities View*, *Inseparability* and *Partial Consideration* clears the ways to a more promising view. The aim of this chapter is to elaborate this view. In the remaining ones, I will discuss some of its most important merits. I shall call this new account of powerful qualities "Dual-Aspect Account". As I will explain, the idea that all fundamental properties have essentially some dispositional and qualitative aspects plays a central role in its articulation. These notions capture in a more precise way the idea that "in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character" (Martin and Heil 1999, 45–46).

¹⁰ Recall that the identity theorist leaves open the possibility that a property can have more dispositional and qualitative ways of conceptualizing, descriptions, and aspects (Chapter 3, §3.3). The proposed readings of *Identity* must be understood accordingly.

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

Qualitative Aspect: a property P has some qualitative aspect if and only if the possession of P qualitatively contributes to the make-up of every bearer of P.

The plan is as follows. In the remainder of this section, I will lay out the metaphysical backbone of the Dual-Aspect Account. In §4.2, I will defend the idea of dispositional and qualitative aspects from an objection raised by John Heil (2003). In the same section, I will also discuss two other aspect views that can be found in the literature different conception of aspects that can be found in the literature: Kristina Engelhard's (2010) and Henry Taylor's (2018). Lastly, in §4.3, I will examine how the notions of dispositional and qualitative aspects elucidate the claims *Powerful Qualities View*, *Inseparability*, and *Identity*.

4.1.2 *Substance and Property*

John Heil (2012) and C. B. Martin (2008), who are the leading proponents of the Identity Theory, maintain a two-category ontology: the fundamental constituents are substances (or property-bearers), namely concrete objects, and properties that are ways concrete objects are. This ontology fits well with the Dual-Aspect Account. The articulation of the Dual-Aspect Account is a distinctive metaphysical project. It is desirable that any metaphysical project is informed by scientific findings, but science does not govern metaphysics. In what follows I will maintain the spirit of the inquiry so far: it is the business of empirical science to discover what items occupy the placeholders of fundamental properties and property-bearers.

Note that the Dual-Aspect Account does not force us to adopt a two-category ontology. It is a flexible view that can be incorporated in other ontologies. For example, it is available for someone who favours a one-category ontology of only properties. On the resulting view, the fundamental constituents are properties that have essentially dispositional and qualitative aspects. The Dual-Aspect Account is also available for someone who holds that the fundamental constituents are properties, property-bearers, and relations. Also on this view, one can maintain that properties have essentially dispositional and qualitative aspects. Insofar one admits the category of property, she can benefit from the adoption of the Dual-Aspect Account.

Why, then, am I adopting a two-category ontology of substance and property? Because these categories are well-suited to capturing the world as we find it. In everyday life and scientific investigation, we encounter and interact with objects that appear to be propertyed-entities; entities that seem to have properties. Tables and chairs have size and shape, electrons and other particles have mass, charge, and spin. And so on. Any ontology that aspires to accommodate the most general features of the world ought to capture this fact.

Someone could point out that there is no consensus on how to read off an ontology from what everyday experience and science. On the one hand, scientific theories do not wear ontology on their sleeves. Namely, it is hard to infer what the metaphysical categories of our world are from science. On the other hand, everyday experience is notoriously an unreliable guide for telling us what exists. Yet there are some philosophical reasons for thinking that a two-category ontology of substance and property is preferable to ontologies that dispense with either of these categories.

An example of an ontology that denies substances is the standard bundle theory of tropes (e.g. Williams 1953; Campbell 1990). The Dual-Aspect Account is preferable to a bundle view of powerful qualities for it is more conservative: it is “closer to” to the picture of the world we find it in ordinary experience and scientific theorising. Here the assumption is that in deciding between competing theories, other things being equal, we ought to favour the less revisionary one with respect to how things manifestly appear. Albeit debatable, such an assumption is a reasonable one. The Dual-Aspect Account does not ask us to renounce property-bearers. We can maintain that there are things that have the property of being rectangular, such as some tables, and other things that have the property of being negatively charged, such as electrons.

The version of the Dual-Aspect Account I wish to defend here is also preferable to views that do away with properties. An example is the view that Peter Van Inwagen called “austere nominalism” (2011). According to this view, there are only particular things such as the table in front of me and Luna the black cat, coiled on top of it. We can ascribe many predicates to Luna and the table. For example, we can predicate that the table has a certain shape and colour, and that Luna is a black cat. However, on austere nominalism, there is no corresponding property for any of these predicates. When we say, for example, that Luna “is a black cat”, we are not picking a property (blackness) that Luna has. On austere nominalism, there is no such a property in virtue of which Luna is black. This is a parsimonious view, but it faces an explanatory challenge.

The main difficulty for the austere nominalist is to offer a satisfactory account of resemblances among particulars (cf. Armstrong 1978, 44–57). Consider Mimi, another black

cat. Both Luna and Mimì are black. On austere nominalism, we can only say that the predicate “is black” can be ascribed to both to Luna and Mimì. But saying that both Luna and Mimì are black *because* the predicate “is black” can be ascribed to both cats appears to be an inadequate explanation for their resemblance. It seems to get things the wrong way: it is because Luna and Mimì are both black that the predicate “is black” applies to each of them. However, the austere nominalist cannot invoke the property of blackness to account for the resemblance of Luna and Mimì. In contrast, ontologies that admit properties are in a better position. On these views, the resemblance between Luna and Mimì holds in virtue of the property of blackness that both cats have. A two-category ontology evades the explanatory worry of austere nominalism. This represents a reason in favour of its adoption.

In what follows, I will articulate the Dual-Aspect Account by embracing Heil’s idea that substance and property are “complementary categories of being” (Heil 2012, 12). Accordingly, substances are property-bearers, and properties are ways substances are.

Substances are property bearers; properties are ways substances are. If there are substances, there are properties; if there are properties, there are substances. Every substance is some way or other, every property is a way some substance is. (Heil 2012, 12)

Every substance is *itself* some way or other, indeed many ways. These ways are its properties. For a substance to possess a property is for it, the substance, to be a particular way. (Heil 2012, 15)

The categories of substance and property are fundamental and complementary. To think of a substance is to think of something that is various ways; to think a property is to think of a way a substance is or could be. A substance cannot be no way at all, and a property cannot fail to be a property of a substance, a way a substance is or might be. (Heil 2012, 16)

The previous passages suggest that Heil believes that it is a matter of metaphysical necessity whether substances are propertyed. To put it differently, a substance is necessarily propertyed in some ways or other. On this view, the necessity between substances and properties is not grounded in some further entities. Rather it depends on the characterisation of substances as being in some ways, and properties as ways substances are (Heil 2003, 172). Also in this

case, it is worth bearing in mind that the Dual-Aspect Account is available for those who dislike the idea that substance and property are complementary categories.

At this point, the reader may wonder whether properties, on the Dual-Aspect Account are tropes or universals. Once again, the Dual-Aspect Account does not force us to choose sides. The decision between tropes and universals rests on independent factors (for an overview of the trope–universal distinction, see MacBride 2005, 2018). Heil and Martin opt for a tropes view of properties. But the powerful qualities view is available also for the friend of universals. The same holds for the Dual-Aspect Account. In the previous chapters (and examples), I have been treating properties as universals to avoid unnecessary complications in presenting the powerful qualities view. I will maintain the same attitude in this chapter and the following ones. Here it is important to bear in mind that a conception of powerful qualities does not force us to adopt a tropes view of properties. These commitments are independent. However, it is worth acknowledging that on some interpretations the distinction between universals and tropes is not mutually exclusive (cf. MacBride 2005). It is therefore possible to embrace a view of powerful qualities and maintaining both universals and tropes (e.g. Lowe 2006).

The version of the Dual-Aspect Account that I wish to defend here, like the Identity Theory, is a view of fundamental properties. However, both views are compatible with the thesis that all sparse non-fundamental properties are powerful qualities. However, I will not defend this version here. Some identity theorists like John Heil (2003, 2012) and C. B. Martin (2008) seem to be sympathetic to the view that sparse, non-fundamental properties are powerful qualities. For example, Heil often mentions examples of colours and shapes to illustrate the notion of a powerful quality. However, he does not explicitly advocate the view that all properties are powerful qualities. Here it is useful to acknowledge a distinction between fundamental and sparse non-fundamental properties. On certain conceptions, sparse and fundamental properties overlap (e.g. Lewis 1986a). Others are committed to a distinction between a *fundamental* conception of sparse properties and a *scientific* one (Schaffer 2004). On the former, the fundamental properties are those invoked by physical theory. On the latter, the sparse properties also comprise those invoked by other scientific disciplines such as chemistry and biology. The version of the Dual-Aspect Account I wish to defend in this chapter holds a fundamental conception of sparse properties. However, it is also compatible with a scientific conception of sparse properties. In what follows, examples that concern intuitively non-fundamental properties are to be understood as merely illustrative. The sense of familiarity with certain properties will be sometimes useful to unpack some relevant claims.

Every satisfactory ontology of properties must be internally coherent. In Chapter 3, I argued that the commitment to *Identity* represents a threat to the Identity Theory in this respect. While the charge of contradiction can be resisted, each of the suggested readings of *Identity* faces some objections. The crucial advantage of the Dual-Aspect Account is that it evades this problem for it renounces *Identity*. However, the Dual-Aspect Account faces a preliminary objection that must be addressed before moving on. This objection, which has been raised by Heil (2003), targets the very idea that powerful qualities have dispositional and qualitative aspects. Fortunately, as I will explain in the next section, Heil's objection can be successfully resisted.

4.2 The Dual-Aspect Account Elaborated

4.2.1 *Aspects of properties defended*

In Chapter 3, I introduced the notion of an *aspect*. Here I shall not repeat its characterisation, but a summary will help the reader (See Chapter 3, §3.2f or a detailed discussion). An aspect is a way of being a property. The idea of ways of being of properties that I have in mind traces back to Jerrold Levinson who claims that that an object's ways of being are the "varied fashions in which it goes the complicate business of existing" (Levinson 1978, 2). On the Dual-Aspect Account, properties as well as objects go the complicate business of existing in some ways or other. In slogan form: properties are ways objects are; aspects are ways properties are.

The notion of an aspect appears to be irreducible to more basic ones. On the proposed conception, aspects supervene on properties, and it is the nature of a property that determines the aspects it has. These qualifications have two important consequences: (i) since I endorse the standard view that what supervenes is no addition to being, aspects are ontologically lightweight; (ii) since it is the nature of a property that determines its aspects, then the same property has the same aspects in every possible world where it exists.

We can regard aspects as ontologically lightweight higher-order properties. An example will illustrate. Consider the property of having a certain charge. It has the higher-order property of having a certain magnitude that can be measured in coulombs. On the proposed view, this is an aspect of the property of having a certain charge: given (i), it not something which is ontologically over and above having a certain charge, and given (ii) it is the nature of having a certain charge that determines its having the aspect of having a certain magnitude.

The Dual-Aspect Account holds the thesis that all fundamental properties have essentially dispositional and qualitative aspects. To repeat, these notions capture in a more precise way the idea that “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (Martin and Heil 1999, 45–46):

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

Qualitative Aspect: a property P has some qualitative aspects if and only if the possession of P qualitatively contributes to the make-up of every bearer of P.

By appealing to dispositional and qualitative aspects, we can offer a more precise definition of a powerful quality. This is the first important benefit that aspects bring us.

Powerful Quality: a property P is a powerful quality if and only if (1) P has some dispositional aspects and (2) P has some qualitative aspects.

To give an example, consider charge—a putative fundamental property. Suppose that charge is a powerful quality. On the Dual-Aspect Account, it would have dispositional and qualitative aspects. By having a certain charge, a particle is disposed to produce an electromagnetic force. This would be a dispositional aspect of charge. At the same time, by being charged, a particle has a certain quantity of charge which can be measured in Coulombs. Having a certain quantity of charge is a qualitative aspect of charge. Namely, it is a qualitative contribution of charge to the make-up of that particle; it is a matter of how the particle is occurrently like by having a certain charge.

As I argued at length in Chapter 3, the introduction of dispositional and qualitative aspects allows us to demystify the Identity Theory. However, the very idea that powerful qualities can be thought of as properties having aspects faces an objection put forward by Heil (2003, 118–120).

The tenability of the Dual-Aspect Account demands to assess the force of Heil’s objection. Fortunately, as I will explain, the objection can be resisted. However, it is still worthy of attention for it allows us to clarify further the conception of aspects in question. Relatedly, the discussion highlights the difference between the Dual-Aspect Account and other aspects views in the vicinity.

A word of caution: the Dual-Aspect Account suffers the same linguistic ambiguity of the Identity Theory. Talk of aspects strongly suggests that a property has aspects in the same fashion as a chair has four legs. It is tempting to regard the Dual-Aspect Account as the view that a property is a compound or conjunction of dispositional and qualitative aspects. But this is not the version of the Dual-Aspect Account I advocate here. Note that a compound view of aspects is a live option. For example, Henry Taylor (2018) endorses this view (I will discuss Taylor's view in due course). Unfortunately, there is no satisfactory way of preventing the impression that powerful qualities are sort of compound properties. One has to bear with the ambiguity. But once the Dual-Aspect Account is clarified, its merits are worth tolerating the ambiguity.

Heil grants that the plausibility of thinking of aspects in terms of higher-order properties (2003, 119). On this interpretation, a dual aspect view of powerful qualities would hold that a powerful quality bears further dispositional and qualitative higher-order properties. The objection is that this amounts to a mischaracterisation of the powerful qualities view: this view does not hold that "every property has a dispositional aspect and a qualitative aspect" (2003: 118) in the sense of having further higher-order properties.

If Heil's objection were sound, the claim that the Dual-Aspect Account is a more promising version of powerful qualities would be undermined. More significantly, the Dual-Aspect Account would face two important worries (Heil 2003, 118–120). First, it would reiterate the robustness of the distinction between powers and qualities. This would undermine the superiority of the Dual-Aspect Account over Dispositionalism and Categoricalism. Second, the Dual-Aspect Account would clash with the claim the dispositional and the qualitative are not "'aspects', or 'sides', or higher-order properties of properties" (Heil 2003, 112).

These worries are legitimate. At first impression, Heil's objection does target the Dual-Aspect Account: aspects can be regarded as higher-order properties. However, on closer inspection, Heil protests a specific conception of aspects which is not the Dual-Aspect Account's one. The previous problems arise just in case we think of aspects as *ontologically robust properties*. By contrast, on the Dual-Aspect Account, aspects are lightweight higher-order properties (Chapter 3, §3.2). This is because aspects are taken to be supervenient on properties. Since I embrace the canonical view that what supervenes is no addition of being (e.g. Armstrong 1997), aspects are to be understood as lightweight, non-ontic higher-order properties. Therefore, the Dual-Aspect Account escapes Heil's objection.

Here it could be useful to recall the analogy between the proposed conception aspects and the *manners of existing* of tropes (Chapter 3, §3.2; Williams 1953; Campbell 1990;

Simons 1994; Maurin 2002; Hakkarainen and Keinänen 2017). According to the standard view of tropes, simple tropes lack any constituents (they are mereologically simple). Yet these simple tropes are individually distinct from each other and primitively resembling some other ones. The features of being individually distinct from each other and being primitively resembling some other tropes are not further entities that simple tropes have. Rather they are “manners of existence”: ways in which simple tropes exist (Hakkarainen and Keinänen 2017, 652). According to the standard view, these manners of existence supervene on simple tropes. By embracing the canonical view that what supervenes is no addition to being, the simple tropes’ features are best understood as lightweight properties (Campbell 1990, 37). Of course, the standard view of tropes is not exempt from problems (e.g. Daly 1994). Here the analogy is meant to illustrate that the claim that a property has aspects does not necessarily amount to the view that these are ontological additions to the property itself.

In a slightly more precise way, we can reconstruct Heil’s objection as the following argument.

- (1) Aspects are higher-order properties.
- (2) A dual aspect view holds that “every property has a dispositional aspect and a qualitative aspect” (Heil 2003, 119).

Therefore, from (1) and (2):

- (3) A dual aspect view holds that every property has a higher-order dispositional property and a higher-order qualitative property.

Heil claims that the conclusion (3) violates the powerful qualities view and raises the problem of reiterating a robust distinction between the dispositional and the qualitative. But these worries do not follow unless we assume that aspects are ontic, ontologically robust higher-order properties. To put it differently, if we were to replace (1) with:

- (1*) Aspects are higher-order ontic properties.

We would reach the conclusion that:

- (3*) A dual aspect view holds that every property has a higher-order ontic dispositional property and a higher-order ontic qualitative property.

Heil would be right in this case: (3*) violates the powerful qualities view and reiterates a robust distinction between the qualitative and the dispositional.

The motivating reason for embracing the powerful qualities view is to avoid the commitment to the power–quality distinction. By adopting such a distinction, it seems that we are forced to choose between two incompatible pictures about fundamental properties: one that they are essentially powerful, the other they are not (I illustrated these conceptions and their problems in detail in Chapter 2. Here I will not repeat the discussion). The powerful qualities theorist contends that both views are unable to accommodate the fact that fundamental properties appear to be at once powerful and qualitative. For example, the property of having a certain gravitational mass, which is a putative fundamental one, empowers a bearer with distinctive dispositions and, at the same time, it is a matter of how that bearer is like (namely, it is massive). The powerful qualities theorist claims that a view that forces us to choose between fundamental powers and fundamental qualities is inadequate to capturing the world as we find it. The powerful qualities view is therefore a preferable approach. The Dual-Aspect Account may claim the same advantage for it is a version of the powerful qualities view.

Crucially, the Dual-Aspect Account is not committed to (1*). Rather, on the conception of aspects I wish to defend here, (1) is to be understood as:

(1**) Aspects are higher-order non-ontic properties.

Therefore, instead of (3*), we reach the conclusion:

(3**) A dual aspect view holds that every property has a higher-order non-ontic dispositional property and a higher-order non-ontic qualitative property.

Here with “non-ontic” I simply mean “not ontologically robust”. On the Dual-Aspect Account, if God would have to create a property, she would get its aspects for free. God would not have to make another act of creation for giving dispositional and qualitative aspects to the property in question. Once we have a property, its aspects supervene on it. By embracing (1*), the Dual-Aspect Account does not reiterate an ontologically robust distinction between powers and qualities. Heil’s objection is therefore resisted.

The Dual-Aspect Account has another merit: a non-ontic conception of aspects does not mischaracterise the powerful qualities view. On the canonical version, powerful qualities

are unitary entities (Heil 2003, 114–115). The same holds on the Dual-Aspect Account. On both views, powerful qualities are unitary, essentially dispositional-and-qualitative properties. The difference is that the dispositionality and qualitativity of powerful qualities, on the Dual-Aspect Account, is not identical. This is because the dispositional and qualitative aspects are distinct. This allows us to escape the contradiction objects that the Identity Theory faces (Chapter 3).

Heil's objection against aspect views does not afflict the Dual-Aspect Account. But it is nonetheless instructive. An ontic conception of aspects is in fact a viable option (I will discuss it in the next sub-section). It is therefore important to distinguish the Dual-Aspect Account from other aspect views.

4.2.2 *Other Dual Aspect Views*

To my knowledge, in the literature there are two dual aspect views that share some similarities with the Dual-Aspect Account: one is Kristina Engelhard's (2010), the other is Henry Taylor's (2018). I will consider them in turn. Then I will offer some reasons for favouring the Dual-Aspect Account. As it will emerge, there are important differences between these views and the Dual-Aspect Account. It is therefore crucial to avoid confusion between these views and the conception of aspects I wish to defend in this work.

Let us begin with Engelhard's dual aspect view. On her view, properties have dispositional and qualitative aspects in a lightweight sense. Thus Engelhard's view does not amount to an ontologically robust distinction between the dispositional and the qualitative (Engelhard 2010, 52). This is a relevant similarity with the Dual-Aspect Account. In addition, Engelhard's view resembles the version of the Dual-Aspect Account in three other respects: (i) properties are ways of being of substances; (ii) to consider aspects is a matter of abstraction; (iii) the basic ontological categories are property and substance (or property bearer) (Engelhard 2010, 53–54). Despite this superficial resemblance, I will argue that Engelhard's dual aspect view and the Dual-Aspect Account differ significantly.

Engelhard's dual aspect view is meant to be a version of Pandispositionalism—the view that all fundamental and non-fundamental properties are powers—able to escape some traditional objections against pure powers view (Engelhard 2010, 53–54; Chapter 2, §2.2.3). By contrast, the Dual-Aspect Account is a version of powerful qualities. Therefore, the two views are committed to two different pictures about the nature of fundamental properties: on Engelhard's view, fundamental properties are essentially powerful; on the Dual-Aspect Account, they are essentially powerful-and-qualitative. It is important to note that both views are compatible with the claim that properties have dispositional and qualitative aspects. But

only on the Dual-Aspect Account, a fundamental property have both aspects *essentially*. On Engelhard's view, it is possible that a fundamental property has the same dispositional aspect in every possible world, but it has different qualitative ones in some of them. The Dual-Aspect Account does not permit such a possibility for a property has the same dispositional *and* qualitative aspects in every possible world.¹¹

The second difference concerns how Engelhard conceives of aspects. On both the Dual-Aspect Account and Engelhard's view, aspects are not ontologically robust entities. However, she thinks of the dispositional aspect of a property as capturing its "nomic relations" with other properties (2010, 54). A nomic relation has two features: (i) it has a certain modal force, and (ii) it can be understood in terms of a property's directedness toward certain manifestations (cf. Molnar 2003, 60). For example, the dispositional aspect of the property of being charged would be the nomic relation with the property of producing an electromagnetic force (cf. Engelhard 2010, 53).¹² The nomic relation between these two properties has a certain modal strength. However, Engelhard does not specify it.

There is a sense in which Engelhard's dispositional aspect is similar to the Dual-Aspect Account's one. On both views, the dispositional aspect captures the idea that by possessing a property a bearer has some powers. Recall that on the Dual-Aspect Account if a property has some dispositional aspects, then every bearer of that property has some powers.

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

The difference with Engelhard's view concerns the relation between the property and its dispositional aspect. On the Dual-Aspect Account, the dispositional aspect is *a way of being* of a property. It is a matter of how that property exists. Differently, Engelhard thinks of a dispositional aspect as *a way of considering* a property's dispositionality as abstracted from its particularity. In her words:

¹¹ It is worth noting that an aspects view of properties would be also compatible with a form of dual aspect Categoricalism. On this view, the fundamental properties have essentially qualitative aspects, but non-essentially dispositional ones. In order to distinguish the Dual-Aspect Account from other aspects views, we need to consider the nature of fundamental properties.

¹² Engelhard articulates her dual aspect view by adopting E. J. Lowe four-category ontology (2006). Two of these categories are *properties* (as thought of as universals) and *modes* (particular ways individuals are). By adopting Lowe's view, Engelhard is able to specify the nomic relations between modes and properties. For the purposes of this chapter, this is an unnecessary complication that we can safely ignore.

We consider the very same property as a power if we abstract from its making this particular being that way, but consider the nomic relations it makes a particular be involved with. We can say that we consider the property's power feature [i.e. dispositional aspect] if we consider it as a universal. (Engelhard 2010, 55)

It seems that a property's dispositional aspect is a matter of regarding it as a universal. An example will illustrate this claim. A particular electron has the property of being negatively charged. If we were to follow Engelhard, the dispositional aspect of the electron's negative charge is a way of considering it in abstraction from its particularity. In particular, we should consider charge in abstraction from its particularity and in terms of its nomic relations with other properties such as that of producing electromagnetic force.

It appears that Engelhard's notion of a dispositional aspect is in some sense a conceptual matter. In contrast, on the Dual-Aspect Account, it is an ontological matter: it is a way of being of a property. The dispositional aspect of an electron's charge is not a matter of how we think of it. Rather it is a way the property of having a certain charge is. Of course, it is possible to hold that we can consider aspects in abstraction from the particularity of their properties. For example, there may be aspects that are possessed only by particular properties and not others. But an aspect, on the Dual-Aspect Account, is not dispositional *because* we think of it in abstraction from its particularity. Note that the claim here is not that Engelhard's notion of a dispositional aspect is inadequate. Simply, it is not the same conception of the Dual-Aspect Account.

Someone, however, might wonder if there is any reason for favouring the Dual-Aspect Account's over to Engelhard's one. As it happens, it seems that Engelhard's view faces a potential worry that the Dual-Aspect Account evades. The worry concerns Engelhard's conception of dispositional aspects: it leaves unclear whether properties are really powerful. If the dispositional aspect of the charge of an electron is a way of considering it as abstracted from its particularity, is the electron's charge really powerful?

Since Engelhard aims to offer a version of Pandispositionalism, an affirmative answer is required. Unfortunately, her notion of a dispositional aspect leaves open a troublesome possibility for her project. Someone might adopt Engelhard's dispositional aspect and yet argue that properties are not essentially powerful. For example, a categorialist who likes Engelhard's idea of aspects may argue that fundamental properties are essentially qualitative and yet agree that we can consider properties in abstraction from their particularity (and in terms of their nomic relations). If we were to embrace Engelhard's view, these qualities

would be essentially qualitative and yet would have dispositional aspects. Such a possibility threatens the spirit of Pandispositionalism.

The worry becomes even more significant if we consider that Engelhard hints at a view of properties as qualities. Consider, for example, the following passages:

We consider the property's qualitativity insofar we do not abstract from the fact or state of affairs that it qualifies but take it as part of the fact in question involving one and the same property; as a trope the property makes a particular being this or that way. (Engelhard 2010, 55)

We consider the qualitativity of "being negatively charged" if we consider it as that which makes this particular be this way. The qualitative feature fixes the identity of the property. The qualitative feature of a property is considered in an instantiated property, as part of a state of affairs or fact. (ibid.)

On Engelhard's view, it appears that a qualitative aspect is property considered in terms of its particularity, which fixes its identity. We could say that the qualitative aspect of the charge of an electron is what makes it different from the charge of other electrons. On this view, the distinction between dispositional and qualitative aspects lies in the way in which we regard the particularity of properties.

The previous characterisation of aspects suggests that properties, on Engelhard's view, are in fact qualities. While properties possess a dispositional aspect by virtue of standing in nomic relations with other properties, they do not seem to be essentially powerful. Arguably, the pandispositionalist thinks of properties as essentially powerful independently from the way we regard their particularity. Engelhard's conception of dispositional aspect does not warrant that. While Engelhard rightly claims that her view is a dual aspect one, her commitment to Pandispositionalism is under threat.

The Dual-Aspect Account preserves the commitment to the powerful qualities view. Thus it maintains the view that fundamental properties are essentially powerful. Dispositional and qualitative aspects are not a matter of how we regard the particularity of properties. Rather they are a matter of how properties are. This allows us to capture the ontological import of the powerful qualities view. First and foremost, this view holds a thesis about the nature of fundamental properties. By embracing the proposed conception of aspects, the charge of an electron is a fundamental powerful quality just in case it has some dispositional and qualitative aspects essentially. This requirement allows us to distinguish

the Dual-Aspect Account from other aspect views of properties. If we aim to preserve the commitment to the idea that all fundamental properties are essentially powerful, then the Dual-Aspect Account's conception of aspects is preferable to Engelhard's one. The latter remains an available option, but it apparently fails to secure the claim that properties are essentially powerful.

Now let us consider the other dual aspect view: Henry Taylor's *compound view* of powerful qualities, which is supposed to be a middle ground between Categoricalism and Dispositionalism (2018).¹³ On the compound view, properties are "essentially compounds of distinct dispositional and qualitative parts" (Taylor 2018, 1438). These parts can be regarded as the counterpart of aspects with a crucial difference: they are ontologically robust entities. The dispositional parts of a property are those that contribute to a bearer's dispositions. In contrast, the qualitative parts are those that *do not* contribute to the dispositions of a bearer.

Taylor claims that the compound view has two related merits: first, it is clearly different from the pure powers view (according to which properties are essentially powerful); second, it is also different from traditional Categoricalism (Taylor 2018, 1438–1439). As I will explain, the Dual-Aspect Account can claim the same advantages. Yet I will also argue that there are another two reasons for preferring it over to the compound view. But let us consider the compound view's first.

The first merit has to do with Taylor's claim that the pure powers view and the Identity Theory of powerful qualities fail to be distinct. According to Taylor's assessment, "neither position can claim an advantage over the other" for both views have access to the same theoretical resources (2018, 1438). The second one concerns the idea that properties, on the compound view, have their dispositional and qualitative parts (or aspects) essentially. The categoricalist maintains that the dispositional contribution the possession of properties makes to bearers is not essential. Thus the compound view is different from Categoricalism. Here I shall not discuss whether Taylor is right in claiming that the Identity Theory and Dispositionalism amount to the same conception of properties. Instead I will focus on the question of whether there is any reasons for favouring an ontologically lightweight conception of aspects such as that of the Dual Aspect Account (§4.2.1).

According to Taylor (2018), both powerful qualities and pure powers have qualitative aspects. On both conceptions, properties are actual features of their bearers (Taylor 2018, 1425–1426). Powerful qualities are "here and now, actual, not merely potential" properties

¹³ The discussion of Taylor's compound view can be also found in my paper "The Identity Theory of Powers Revised", which has been conditionally accepted on *Erkenntnis*.

of their bearers (Heil 2012, 59). Similarly, powers are “not merely the potentiality of some behaviour” (Molnar 2003, 99). Rather to have a power is to “have an actual property” (ibid.). Since qualitativity is a matter of how a thing is occurrently like, both powerful qualities and pure powers have the qualitative aspect of being actual. This represents a potential problem for dispositionalists and identity theorists who aim to preserve a distinction between their views. The question is whether there is a robust distinction between pure powers and powerful qualities, since both have dispositional and qualitative aspects.

Taylor argues that the compound view has the merit of avoiding the collapse into Dispositionalism. On the compound view, the qualitative aspect of a property does *not* contribute to the dispositions of a bearer and yet it is essential to it (Taylor 2018, 1438). Such a conception is distinct from the dispositionalist’s one. In her view, the nature of property is only essentially dispositional.

Like the compound view, the Dual-Aspect Account can be distinguished from Dispositionalism. According to Dual-Aspect Account, all fundamental properties have essentially dispositional and qualitative aspects. This interpretation captures the claim fundamental properties have essentially a dual dispositional and qualitative nature (Martin and Heil 1999, pp. 44–45; Martin 2008, p. 44). Like the compound view, the Dual-Aspect Account holds that fundamental properties have essentially qualitative aspects. It is therefore possible to distinguish it from Dispositionalism, on which fundamental properties have only an essentially dispositional, or powerful nature (e.g. Bird 2007a), and powerful qualities. However, in contrast with the compound view, the Dual-Aspect Account does not embrace a negative characterisation of qualitative aspects.

A similar reasoning extends to the case of Categoricalism. The compound view is different from traditional Categoricalism because properties have an essentially dispositional aspect (or part). By contrast, the categoricalist holds that the nature of a property is only essentially qualitative in the sense of being non-dispositional (e.g. Armstrong 1997). Taylor claims that compound view is different from the traditional version of Categoricalism because properties are thought of having both dispositional and qualitative aspects essentially. The same can be said from the viewpoint of the Dual-Aspect Account. This permits to distinguish the Dual-Aspect Account from Categoricalism for the latter is not committed to the view that the dispositional aspects are essential to qualities.

Overall, the adoption of either the compound view or the Dual-Aspect Account does not offer any significant advantage with respect to the task of distinguishing powerful qualities from pure powers and pure qualities. In this respect, the compound view and the

Dual-Aspect Account are on a par. Yet it seems to me that there are at least two important reasons for favouring the former.

First, the Dual-Aspect Account does not force us to embrace a characterisation of qualitative aspects in opposition to the dispositional ones (cf. Taylor 2018, 1438). Therefore, we evade an unlovely and uninformative characterisation of the qualitative. An advantage of this strategy is preserving the spirit of the powerful qualities view. Recall that the powerful qualities theorist claims that the mutual exclusivity of the dispositional and the qualitative is “deeply flawed” (Heil 2003, 118).

Second, the Dual-Aspect Account, in the version I wish to defend here, is more parsimonious than the compound view. From the viewpoint of the Dual-Aspect Account, aspects are no addition to being with respect to the properties of which they are aspects. They supervene on properties. By adopting the doctrine that what supervenes does not constitute a genuine ontological addition, aspects are therefore ontologically lightweight. Parsimony represents yet another merit of the proposed conception of aspects.

As for Engelhard’s view, the claim here is not that Taylor’s conception is inadequate. Rather the claim is that the Dual-Aspect Account holds a different conception of aspects. Therefore, it has to be distinguished from Engelhard’s dual aspect view and Taylor’s compound view.

Someone might wonder whether which aspects view, among the discussed ones, is the most satisfactory. I argued that there are a few reasons for favouring the Dual-Aspect Account: (i) *contra* Engelhard’s view, the Dual-Aspect Account captures the idea that properties are essentially powerful *qua* properties; (ii) *contra* Taylor’s compound view, it does not embrace a negative characterisation of the qualitative aspects; and (iii) it is more parsimonious.

Having illustrated that the Dual-Aspect Account is different from other aspect views in the literature, I will now turn to discuss a comparison with the Identity Theory. This will help the reader in identifying the commonalities and differences between these views. More significantly, it will highlight how the Dual-Aspect Account can improve a conception of properties as powerful qualities.

4.3 Identity Theory and Dual-Aspect Account: Differences and Commonalities

4.3.1 Fundamental Powerful-and-Qualitative

In Chapter 3, I argued that the Identity Theory of powerful qualities is committed to the following claims.

Powerful Qualities View: all fundamental properties are essentially dispositional-and-qualitative, or powerful qualities.

Partial Consideration: every sparse property can be considered as dispositional or qualitative.

Inseparability: the dispositionality and qualitativity of every sparse property cannot be separated in reality.

Identity: a property P's dispositionality is P's qualitativity, and each of these is P.

The Dual-Aspect Account embraces *Powerful Qualities View*, *Partial Consideration*, and *Inseparability*. I already discussed how the introduction of the notions of dispositional aspect and qualitative aspect allows us to formulate more precisely the ontological reading of *Identity*, namely *Identity_o*:

Identity_o: there is no real distinction between a property P's dispositional aspect and P's qualitative aspect, and each of these aspects belongs to one and the same property P.¹⁴

In what follows, I will show how it is possible to reformulate *Powerful Qualities*, *Partial Consideration*, and *Inseparability* in terms of aspects. By doing so, the precision of these claims will improve.

Let us begin with *Powerful Qualities View*. By having aspects in our framework, we can reformulate it as the thesis that all fundamental properties have essentially dispositional and qualitative aspects. This allows us to distinguish the powerful qualities view from other views that hold that properties have dispositional and qualitative aspects but not both of them are possessed essentially. For example, on Taylor's interpretation (2018), Dispositionalism holds that powers have qualitative aspects in addition to dispositional ones. However, only the latter are essential. In order to preserve a difference between these views, it is important to bear in mind that on the powerful qualities view both aspects are essential.

¹⁴ Recall that powerful qualities can have more than one dispositional aspect and one qualitative aspects. The identity claim concerns every aspect a powerful quality has.

On the Dual-Aspect Account, we can define the notion of a powerful quality as follows:

Powerful Quality: a property P is a powerful quality if and only (1) P has some dispositional aspects and (2) P has some qualitative aspects.

From the viewpoint of the Dual-Aspect Account, *Powerful Qualities View* is the thesis that all fundamental properties are essentially powerful qualities. I shall postpone the discussion of this thesis to Chapter 6, where I will clarify what a fundamental property is and discuss some arguments in favour of the truth of *Powerful Qualities View*.

For present purposes, it is sufficient to recall that the notions of dispositional and qualitative aspects are supposed to capture the claim that “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (Martin and Heil 1999, 45–46).

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

Qualitative Aspect: a property P has some qualitative aspect if and only if the possession of P qualitatively contributes to the make-up of every bearer of P.

What distinguishes these aspects is how properties that have them contribute to their bearers. If *Powerful Qualities View* is true, then every fundamental property confers upon a bearer some powers and, at the same time, its possession qualitatively contributes to how that bearer is like. For example, the property of having a certain gravitational mass is a putative fundamental powerful quality: it confers upon a bearer some distinctive dispositions such as that of producing a gravitational force and, simultaneously, it is a matter of how that bearer is occurrently like.

A merit of the Dual-Aspect Account is providing a serviceable criterion for evaluating candidate fundamental powerful qualities. By appealing to *Powerful Quality*, we can assess whether or not a certain fundamental property has dispositional and qualitative aspects. Inevitably, some room for disagreement remains. Yet this is an improvement with respect to the Identity Theory.

4.3.2 *Partial Consideration*

Now let us consider *Partial Consideration*. This is a conceptual claim about the ways in which we can think of a property. While *Powerful Qualities View* is a thesis about the nature of fundamental properties, *Partial Consideration* extends to sparse, non-fundamental properties as well. Here it is useful to acknowledge that on some views, there is no distinction between sparse and fundamental properties (e.g. Lewis 1986a; cf. Schaffer 2004). However, the examples invoked by powerful qualities theorists refer to properties that are intuitively non-fundamental such as sphericity (Heil 2003) and hardness (Jaworski 2016). It is therefore plausible to suppose that the powerful qualities theorist thinks that we can partially consider sparse non-fundamental properties in addition to fundamental ones.

For the purposes of this chapter, we do not need to provide the details of what is involved in the mental act of partially considering a property. It is sufficient to bear in mind that it is a process of selectively attending a property in accordance with one of its features while neglecting other ones. For example, we can partially consider the property of having a certain inertial mass in terms of its dispositionality by focusing on the way it disposes a bearer to resist acceleration while neglecting its qualitativity, which may consist in conferring upon a bearer a certain quantity of matter.

The Dual-Aspect Account is able to improve the idea of *Partial Consideration*. We can say that to dispositionally consider a property is to consider it in terms of its dispositional aspect. In same fashion, we can say that to qualitatively consider a property is to consider it in accordance with its qualitative aspect.¹⁵

This way of understanding *Partial Consideration* elucidates the claim that powerful qualities have a dual nature. On the Dual-Aspect Account, aspects are ways of being of properties. This means that if we are dispositionally or qualitatively considering a property in accordance with one of its aspects, then this presupposes that the property has dispositional and qualitative ways of being.

Let us consider an example to clarify this idea. On the Dual-Aspect Account, a putative fundamental property such as charge has dispositional and qualitative aspects. I suggested that we can think of *Partial Consideration* as a way of regarding a property in accordance to its dispositional or qualitative aspect. We can dispositionally consider charge by focusing our attention on the way it empowers a bearer with the disposition to produce an electromagnetic force. Alternatively, we can qualitatively consider charge by attending

¹⁵ Properties may have more than one dispositional or qualitative aspects. More precisely, we can say that to dispositionally/qualitatively consider a property is to consider it in accordance to one of its dispositional/qualitative aspects.

its aspect of conferring upon a bearer a certain quantity of charge that can be measured in coulombs. The latter appears to be a qualitative aspect. Namely, it is a way of how a bearer is occurrently like by virtue of being charged. Crucially, the dispositional and qualitative consideration of charge presupposes that it has dispositional and qualitative aspects. Otherwise, we could not partially consider charge in accordance with these aspects. In this sense, we are able to clarify the ontological import of the powerful qualities view.

Of course, the mental process of partially considering the aspects of a property suffers the limitation of our cognitive abilities. For example, we cannot abstract undetectable aspects. Here the limit concerns our knowledge; it does not represent a threat for the claim that all fundamental properties have dispositional and qualitative aspects. Once again, the interpretation of *Partial Consideration* in terms of aspect clarifies this point. If to consider dispositionally/qualitatively a property is to consider it in accordance to its dispositional/qualitative aspects, then this presumes that such a property has dispositional/qualitative aspects. Surely, we cannot partially consider a property that has undetectable aspects. However, a powerful quality would have dispositional and qualitative aspects independently from whether or not someone were able to partially consider them.

4.3.3 *Inseparability*

Both the Identity Theory and the Dual-Aspect Account hold *Inseparability*. The notions of dispositional and qualitative aspects allow us to specify what it means that a property's dispositionality and its qualitativity cannot be separated in reality. As for *Partial Consideration*, the identity theorist appears to extend *Inseparability* to sparse and yet non-fundamental properties. This is suggested by examples that involve intuitively sparse and yet non-fundamental properties such as sphericity (Martin and Heil 1999) and hardness (Jaworski 2016).

The identity theorist believes that *Inseparability* is a consequence of *Identity*: if a property's dispositionality and its qualitativity are identical, then they cannot be separated in reality because they are the same. The Dual-Aspect Account does not hold *Identity*. Therefore, we face the question of explaining what else may tie together a property's dispositionality with its qualitativity.

To begin with, the dual-aspect account theorist can reformulate *Inseparability* in terms of aspects: the dispositional aspects and the qualitative ones of every sparse property cannot be separated in reality. This reformulation highlights the ontological import of *Inseparability*, which is a claim about the nature of sparse properties.

A straightforward strategy to glue together the dispositional and qualitative aspects would be to invoke a relation that plays such a role. However, this strategy is problematic.

If the relation that ties aspects together is *external*, then the Dual-Aspect Account faces the notorious Bradley's regress (1893, 32–33). Namely, if the holding of the gluing relation between the aspects of a property is *not* fixed by the aspects or the property, then we need to explain what ties together these entities. But this gives rise to a vicious regress. To illustrate it, suppose to invoke an external relation R to glue together the dispositional and qualitative aspects, α and β , of a given property. The mere existence of R , α , and β does not warrant that they stand in the appropriate relation. It seems that we need to invoke another relation R^{**} to relate R with α and β . But the mere existence of R^{**} , R , α , and β does not guarantee that they stand in the appropriate relation. The previous problem is reiterated, and so on ad infinitum. Presumably, the strategies to resist Bradley's regress can be invoked for saving this approach (see MacBride 2016 for an overview). However, another worry is looming: if in order to fasten the aspects of a property, we need an external relation, then the Dual-Aspect Account appears to be less parsimonious than the Identity Theory. More significantly, the admission of external relations threatens the claim that the proposed version of the Dual-Aspect Account is a two-category ontology of substance and property. Arguably, the gluing relation is irreducible to either category. We have to pay its admission in our framework by the coin of ontology. Overall, this is not an attractive strategy.

Another option would be to argue that the inseparability of a property's dispositional and qualitative aspects is warranted by an *internal* relation. If the gluing relation is internal, then its holding is fixed by the property or its aspects. By way of example, consider the kinship relation between Mary and her daughter Miriam. The kinship relation is internal for it is determined by Mary's being the mother of Miriam. Once we have that Mary is the mother of Miriam, we get a kinship relation holding between them.

In similar vein, we can argue the inseparability relation between dispositional and qualitative aspects of a property is determined by how the property is like. Once we have a property, we get an inseparability relation between its aspects. This strategy is more promising than the appeal to an external gluing relation, but it raises another worry. On some views, internal relations are in some sense reducible to their relata and therefore they do not really exist (Simons 2010, 204–205; Heil 2012, 144–146). If so, we could think that the inseparability relation is reducible to the dispositional and qualitative aspects of a property.

However, someone might protest that this strategy looks *ad hoc*: aspects would determine their own inseparability. It is therefore preferable to explore a different approach.¹⁶

Fortunately, the Dual-Aspect Account has the resources for warranting the inseparability of aspects without the need for invoking relations, whether these are internal or external. Therefore, we can avoid the previous worries. On the Dual-Aspect Account, it is possible to argue that what grounds *Inseparability* is the very conception of aspects as ways of being a properties (Chapter 3, § 3.2). A property's ways of being are ontologically inseparable, or inseparable in reality from the property. We cannot separate in reality the ways of being of a property from the property itself. Conceptually, the attempt is ill-conceived. A separation in reality demands a real distinction between entities. As medieval philosophers put it, a real distinction requires the possibilities that the entities in question can exist independently. However, aspects do not enjoy such independence. On the proposed conception, aspects cannot exist independently from the properties of which they are aspects. This is because they are ontologically dependent on properties (Chapter 3, §3.2). To use an analogy, separating a property's aspects from the property would be akin to separating a statue's shape from the statue. We cannot do that in reality. Surely, we can alter the statue's shape by breaking it down. But this does not count as a separation in reality. The aspects of a property P are ways of being of P; were P cease to exist, so that would be for P's aspects. Of course, we can separate the aspects in thought in the sense of selectively attending an aspect while neglecting others. In same fashion, we can abstract the statue's shape from its other properties such as size and material. Since the Dual-Aspect Account holds that every fundamental property has dispositional and qualitative aspects, every fundamental property's dispositional and qualitative aspects are inseparable.

Against the previous strategy to ensure *Inseparability*, someone might argue that it only warrants the inseparability of aspects of fundamental properties. However, *Inseparability* is a claim about sparse properties. So we need some arguments for thinking that the aspects of sparse, non-fundamental properties are inseparable. Here it is useful to recall a distinction between sparse properties, which are those invoked by all scientific disciplines, and fundamental ones, which are invoked solely by physics (cf. Schaffer 2004).

The objection is legitimate. The version of the Dual-Aspect Account I wish to defend is a view of fundamental properties. However, the proposed conception of aspects is suitable for sparse non-fundamental properties as well. While I do not wish to defend the view that

¹⁶ An advocate of this strategy could attempt to resist the *ad hoc* objection by arguing for the irreducibility of internal relations (cf. MacBride 2016, §3). However, the parsimony objection would be reiterated.

all sparse non-fundamental properties have essentially dispositional and qualitative aspects, it seems reasonable to suppose that sparse non-fundamental properties have indeed aspects. Think of some of examples invoked by identity theorist to illustrate *Inseparability* such as that of sphericity. Plausibly, this property can be regarded as having dispositional and qualitative aspects. Sphericity has the dispositional aspect of disposing a bearer to roll on inclined planes. It also has the qualitative aspect of conferring upon a bearer a distinctive geometrical shape. This is a qualitative contribution to the make-up of a bearer of sphericity. Intuitively, the property of being spherical is not fundamental. Yet it does not appear utterly unreasonable to think of it has having dispositional and qualitative aspect. The same could apply to every other sparse property.

There is another motivation for admitting that sparse properties have dispositional and qualitative aspects. It is likely the case that putative fundamental properties such as charge, mass, and spin will turn out to be non-fundamental in light of future discoveries. Such a possibility does not strip off these properties from their sparseness. Nor does it make them lose their aspects. It simply makes them non-fundamental. On the proposed view, aspects are ways of being of properties. Whether a property is fundamental does not affect the possession of aspects. Nor does it affect the inseparability of its aspects. To repeat, this is because the inseparability of aspects is grounded on a conception of aspects as ways properties are. Since there cannot be a real distinction between a property and its aspect, they are inseparable. However, we should leave open the possibility that there may be sparse properties that have neither dispositional aspects nor qualitative ones. The aspects of these properties would be inseparable, but *Inseparability* would be false for they have no dispositional or qualitative properties. An easy fix would be to amend *Inseparability* to accommodate such a possibility. We can reformulate it as the claim that the aspects of every sparse property cannot be separate in reality. Also in this case, a conception of aspects as ways of being of properties would ground their inseparability. Overall, it appears that the Dual-Aspect Account can accommodate *Inseparability* without being committed to *Identity*. As I explained, this approach evades the worries relate to the appeal to a gluing relation between aspects.

To conclude the overview of the Dual-Aspect Account, here is a summary of its claims reformulated in terms of aspects.

Powerful Qualities View: all fundamental properties have essentially dispositional and qualitative aspects.

Partial Consideration: every sparse property can be considered in accordance with its dispositional or qualitative aspects.

Inseparability: the dispositional and qualitative aspects of every sparse property cannot be separated in reality.

The obvious difference with the Identity Theory is that the Dual-Aspect Account is not committed to *Identity*. But the take-home lessons are different ones: (i) it is possible to renounce *Identity* and yet maintain *Powerful Qualities View*, *Partial Consideration*, and *Inseparability*; (ii) by appealing to dispositional and qualitative aspects is possible to improve the precision of these claims. However, both views share an important commonality: they offer a metaphysics of fundamental properties that does not bifurcate the dispositional and the qualitative.

4.3.4 Concluding Remarks

My aim in this chapter was to elaborate the Dual-Aspect Account of properties that has been introduced in Chapter 3. I began by laying out its metaphysical backbone (§4.1). Then I defended the Dual-Aspect Account from an objection raised by John Heil (2003), which targets the very notion of an aspect (§4.2). I also discussed how the Dual-Aspect Account differs from other dual aspect views of properties that can be found in the literature, such as that of Kristina Engelhard's (2010) and Henry Taylor's (2018). These views remain available options. However, I argued that they face some worries that the Dual-Aspect Account evades. After that, I illustrated how the notions of dispositional and qualitative aspects allow us to improve the precision of the claims of *Powerful Qualities View*, *Partial Consideration*, and *Inseparability* (§4.3).

According to Heil, "a measure of success" of an ontological account is its efficacy to resolve "pressing philosophical puzzles" (2012, 288). In the remaining chapters, I will discuss how the Dual-Aspect Account garners its success by discussing two significant "puzzles". The first one, in Chapter 5, concerns the topic of resemblances. I will argue that the notions of dispositional and qualitative aspects render the Dual-Aspect Account preferable to other competing theories of properties. In particular, the introduction of aspects allows us to accommodate a greater variety of relation of resemblances. The second puzzle,

in Chapter 6, regards the problem of phenomenal consciousness and its place in nature. I will examine how the Dual-Aspect Account is a promising framework for improving certain views about the relation between mental and physical properties. In Chapter 6, I will also discuss some arguments in favour of the thesis that all fundamental properties are powerful qualities, which is the overall aim of this work.

CHAPTER 5

IDENTITY AND RESEMBLANCE

The world is not chaos, with every aspect, at every minute, unique, in character. Nor is it undifferentiated blancmange. It is a diverse and orderly cosmos displaying patterns of recurrence. No responsible ontology can evade this very general fact, and no responsible ontology can avoid offering its assay of this situation. (Campbell 1990, 28)

[...] And the result of this examination is: we see a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarities of detail. (Wittgenstein, PI 66)

We speak of different things having the “same” property. The word “same” does not always mean what logicians and philosophers mean with the identity sign “=”. (Armstrong 1997, 14)

5.1 Two Senses of Identity

5.1.1 *Preliminary Remarks*

The world that we inhabit displays patterns of similarities. The leaves of a sycamore tree resemble each other with respect to their shape, but differ in colour or size. Every cat and every jaguar have something in common: they are both mammal, felid, and carnivore. Yet cats and jaguars belong to different species. Scarlet is more similar to crimson than cerulean. Every electron has the same rest mass, charge, and spin. And so on.

Among other things, properties are invoked to account for resemblances. The more properties objects share, the more they resemble. The leaves of a sycamore tree might be resembling in shape, but not in size or colour. A jaguar and a cat have in common the properties of being a felid and being a mammal. Unlike the cat, the jaguar also has the property of being a pantherine. Electrons exactly resemble each other with respect to the property of having elementary charge. And so forth.

Like objects, properties can resemble other properties more or less closely. The property of being a pantherine resembles more closely the property of being a felid than the property of being a canine. The property of being scarlet resembles more closely the property of being crimson than the property of being cerulean.

Every satisfactory theory of properties has to provide the conditions for resemblance among objects and properties. In this chapter I will illustrate what the Dual-Aspect Account fulfils the task. In particular, I will show how the introduction of aspects in our ontology is extremely serviceable for analysing resemblances among properties. In slogan form: the more aspects two properties share, the more they resemble. It is worth bearing in mind that the version of the Dual-Aspect Account I wish to defend in this dissertation is a view of fundamental properties. However, the theoretical benefits of its analysis of resemblance represent a point in favour of the view that sparse non-fundamental properties have aspects as well.¹⁷

The Dual-Aspect Account's analysis of resemblance has two main advantages. First, it gives us more precise conditions for resemblances among properties. Second, it allows us to accommodate a greater a variety of resemblances. It is therefore preferable to non-aspect views of properties. I will elaborate the previous claims by focusing on two cases: one concerns partially resembling properties such as that of being scarlet and being crimson, the other regards resemblances among simple properties.

The first case highlights the merits of the Dual-Aspect Account with respect to trope views of properties (it is worth noting that Heil 2003 and Martin 2008 defend a tropes version of the Identity Theory). Typically, the tropes theorist holds that resemblances among properties are primitive and no further explainable in more basic terms. As John Heil puts it, "objects are similar by virtue of possessing similar properties; properties, in contrast, are not similar in virtue of anything" (2003, 152). On a tropes view, the resemblance between scarlet and crimson is brute. This view fails to capture the intuition that scarlet and crimson resemble each other by virtue of being both shades of red. This is an intuition that we should preserve. As I will explain, the Dual-Aspect Account is up to the task: it accounts for the resemblance of scarlet and crimson in terms of their aspects.

A word of caution: being scarlet and being crimson are determinates of the determinable property of being red. It is widely held that determinables and determinates stand in some metaphysically distinctive relation. However, it is not my claim that the Dual-Aspect Account elucidates the determinable-determinate relation. In what follows, I will not discuss this issue (for a more detailed discussion, see Johnson 1921; Fine 2011; Funkhouser 2006, 2014; Wilson 2012).

¹⁷ Here I acknowledge a distinction between a *fundamental conception* and a *scientific conception* of sparse properties (Schaffer 2004). On the former, the sparse properties are those posited by physical theory. On the latter, the sparse properties are those invoked by all scientific disciplines. In this dissertation, I treated the fundamental properties as sparse properties in accordance to fundamental conception.

The second case, which concerns resemblances among simple properties, highlights the advantages of the Dual-Aspect Account with respect to non-aspect views. Canonically, a property is simple if it is not constituted by other properties. In contrast, a property is complex if it is not simple. Suppose, for example, that the property of being a certain particle is a conjunctive property $M\wedge Q\wedge S$, where M is the property of having a certain mass, Q is the property of having a certain charge, and S is the property of having a certain spin. The conjunctive property $M\wedge Q\wedge S$ is complex; its conjuncts M , Q , and S are simple properties that constitute it. Yet it is perfectly legitimate to ask whether M and Q resemble in some respects. For instance, one might argue that any partial resemblance between M and Q offers a ground for a unified account of these properties. Thus it is desirable to possess an account that permits partial resemblances among simple properties. Non-aspect views lack the theoretical resources for accomplishing this aim. On non-aspect views, simple properties are either identical or “wholly different” (Armstrong 1997, 52). In contrast, the Dual-Aspect Account provides us with conditions for assessing partial resemblances among simple properties. As it will become clear in due course, on the Dual-Aspect Account, simple properties can be partially resembling by virtue of having some resembling aspects. The Dual-Aspect Account is therefore able to accommodate a greater variety of resemblances among properties than non-aspect views. This is a decisive choice-point in its favour.

I will illustrate the previous claims by comparing the Dual-Aspect Account’s analysis of resemblance with two other views: one is the Identity Theory of powerful qualities (Chapter 3; Heil 2003; Martin 2008); the other is David Armstrong’s theory of resemblance. In particular, I will focus on Armstrong’s notion of *partial identity*, which captures a natural way of thinking of partial resemblances among properties (1989a, 102-107; 1997, 51-57). The discussion of Armstrong’s view allows us to highlight the merits of the Dual-Aspect Account with respect to a non-powerful qualities view of properties.

Here is the plan. In §5.1.2 and §5.1.3, I will identify two kinds of resemblance that any satisfactory view has to accommodate: *exact resemblance* and *partial resemblance*. In §5.2.1, I will reformulate these kinds of resemblance from the viewpoint of the Identity Theory and the Dual-Aspect Account. In §5.2.2 and §5.2.3, I will discuss the theoretical advantages of the Dual-Aspect Account’s analysis of resemblance. In these sections, I will examine the cases of partially resembling properties and resemblances among simple properties. In §5.2.4, I will explore a comparison with Armstrong’s theory of partial identity. The last section of this chapter, §5.3, is devoted to a short summary of the Dual-Aspect Account.

Before proceeding any further, a distinction must be clarified. In ordinary language, the word “same” conveys different senses of sameness. We speak of Mary and Miriam wearing the *same* sweater, electrons having the *same* charge, Earth being the *same* as Twin Earth, the Morning Star being the *same* as the Evening Star, water being the *same* as H₂O. And so on and so forth. In the previous cases, the word “same” has different meanings.

In the case of Mary and Miriam wearing the *same* sweater, electrons having the *same* charge, and Earth being the *same* as Twin Earth, the word “same” expresses the idea of sameness among numerically distinct entities. The identity in question is qualitative rather than numerical. Mary’s and Miriam’s sweaters are identical while being numerically distinct. Earth and Twin Earth are identical, but they are two distinct planets. And so on. Call *exact resemblance* this sense of sameness. Exact resemblance captures a loose sense of identity. In this sense, the resemblance relation involves at least two numerically distinct entities.

Yet resemblance comes in degrees; it is not all or nothing. Two objects or properties might be more or less closely resembling. The highest degree of resemblance between them is *exact resemblance*. Every degree of resemblance between them below exact resemblance is *partial resemblance*.

In addition to the loose sense, there is a strict sense of sameness. In the strict sense, the adjective “same” conveys the idea of numerical identity, or self-sameness. Examples of strict identities abound: everything is numerically identical with itself (cf. Lewis 1986a, 192). The Morning Star is one and the same with the Evening Star, water is one and the same with H₂O, and Diana Prince is one and the same with Wonder Woman. And so forth. In this chapter, I will restrict my attention to exact and partial resemblance. The Dual-Aspect Account does not offer any illuminating insights into the notion of self-sameness.

Before moving on, other remarks need to be stated. Resemblances among objects depend on their shared properties. On the Dual-Aspect Account and the Identity Theory, properties are powerful qualities. On these views, resemblances among objects are determined by their resembling powerful qualities.

For illustrative purposes, I will assume that the properties mentioned in the following examples are powerful qualities or can be exhaustively reduced to powerful qualities. This assumption allows us to discuss familiar cases of resemblance while leaving aside the question of whether the properties in question are really powerful qualities. However, it is important to bear in mind that neither the Identity Theory nor the Dual-Aspect Account holds that *all* properties are powerful qualities. Both views hold a thesis about the nature of fundamental properties.

Another assumption: for the sake of simplicity, I will treat properties as universals. This allows us to illustrate the Dual-Aspect Account's analysis of resemblance by setting aside complications which concern the role of location. On tropes view, the location of properties is a determining factor in assessing similarities among them. However, the conditions of resemblance that I will discuss in what follows can be easily incorporated in a tropes framework. I will flag some suggested amendments when needed. Relatedly, it is important to bear in mind that neither the Identity Theory nor the Dual-Aspect Account forces us to embrace a conception of tropes. The version of Identity Theory advocated by Martin and Heil is presented as a tropes view, but this hangs on independent commitments that they endorse (Heil 2003, 137–147; 2003, 152–159; 2012, 93–97; Martin 2008, 44). Very roughly, the trope—universal distinction can be understood as follows: two tropes can be exactly resembling, but never strictly identical; in contrast, two universals can be strictly identical. The decision between tropes and universals rests on independent factors which I shall not examine here (for a more detailed overview of the trope—universal distinction, see MacBride 2005).

Lastly, a terminological note. In the literature, “similarity” and “resemblance” are used interchangeably. For the sake of clarity, I will stick to “resemblance”.

5.1.2 *Exact Resemblance*

Exact resemblance conveys the idea that two properties or objects are qualitatively identical, but numerically distinct. Consider the example of Mary and Miriam, who wear the same sweater. Wearing the same sweater is something that Mary and Miriam have in common. Namely, they share the property of wearing a sweater of a certain model. Yet Mary and Miriam are numerically distinct individuals who have numerically distinct properties. To say that Mary and Miriam are similar with respect to wearing a certain sweater means that they have two exactly resembling properties. More precisely, we can say that Mary has the property P of wearing a certain sweater, Miriam has the property Q of wearing a certain sweater, and P and Q are exactly resembling. Of course, Mary and Miriam might differ with respect to other properties. For example, they might have different height, weight, and eye colour. If Mary and Miriam were exactly resembling with respect to *all* their properties, they would exactly resemble each other. We can generalise by saying that two objects *a* and *b* are exactly resembling just in case all properties of *a* exactly resemble all properties of *b*, and vice versa. We can formulate this idea more precisely as follows.

Exact Resemblance of Objects: for two objects a and b , a exactly resembles b if and only if for each property P of a , there is a property Q such that b has Q and P exactly resembles Q , and vice versa.

We can impose some restrictions on the relevant properties to be considered. For example, one could decide to focus only on the fundamental properties that Mary and Miriam have. Suppose that Mary is a neuroscientist and Miriam is a business manager. Having different professions does not block the possibility that Mary and Miriam might be exactly resembling with respect to their fundamental properties. However, the condition of exact resemblance for objects is hardly useful if we do not specify one for properties.

Exactly resembling properties are qualitatively identical but numerically distinct. It is difficult to spell out the idea of qualitative identity in more basic terms. To illustrate it, we can appeal to the notion of a duplicate. A duplicate P^* of a property P is such that P^* and P are identical with respect to all its intrinsic features; yet P^* and P are numerically distinct properties (Langton and Lewis 1998). Suppose to print several copies of a picture. The image printed in each copy is qualitatively identical to the original picture: it has the same colours arranged in the same way. Yet the copies numerically differ from the original. Exactly resembling properties are like the copies of the picture. We can formulate a criterion of exact resemblance for properties by appealing to the notion of a duplicate.

Exact Resemblance of Properties: for any two properties P and Q , P exactly resembles Q if and only if P is a duplicate of Q .

The claim here is not that exact resemblance among properties can be reduced to duplication. Instead the claim is that the duplication captures the core idea of qualitative identity without numerical identity.

Typically, the relation of exact resemblance is taken to be reflexive, symmetrical and transitive (see Rodriguez-Pereyra (2002, 69–80) for a more detailed discussion of the formal properties of resemblance). The reflexivity of exact resemblance is uncontroversial. For every property or object x , a duplicate y of x would be such that x and y are exactly resembling with respect to their intrinsic features.

Exact resemblance is symmetric; duplicates exactly resemble each other. Suppose that Mary is a duplicate of Miriam. If so, for every intrinsic property of Miriam, P , there is a duplicate property P^* of P that Mary has, and vice versa.

Lastly, exact resemblance is transitive. If properties or objects x and y are exactly resembling, and y and z are exactly resembling, then x exactly resembles z . Suppose two print two copies of your favourite philosopher. Each copy is a duplicate of the original picture. Consequently, if one copy exactly resembles the original picture, so it does the other. Otherwise, they would not be copies of the same original picture.

5.1.3 *Partial Resemblance*

Resemblance comes in degrees: the more properties two entities share, the more they are similar. For example, Simone de Beauvoir and Simone Weil had common the properties of being a human, being French, and being a philosopher. However, we can plausibly suppose that Simone de Beauvoir and Simone Weil were different with respect to their height and weight. In turn, properties might resemble other properties more or less closely. At least intuitively, the property of being scarlet more closely resembles the property of being crimson than the property of being cerulean. For example, both scarlet and crimson are shades of red while cerulean is not. A satisfactory analysis has to specify the conditions for partial resemblance among objects as well as properties.

A view that captures a natural way of thinking of partial resemblances is David Armstrong's theory of *partial identity* (1978b, 116–131; 1989a, 102–107; 1997, 51–57). According to Armstrong, objects and properties that are partially resembling share at least a *common constituent*, which is itself a property. The partial resemblance, or *partial identity* in Armstrong's terminology, depends on the number of common constituents. The more constituents two properties or objects have in common, the more they are similar (Armstrong 1978b, 121; 1989a, 102–103).

As resemblance of properties gets closer and closer, we arrive in the limit at identity. Two become one. This suggests that as resemblance gets closer, more and more constituents of the resembling properties are identical, until all the constituents are identical and we have identity rather than resemblance. (Armstrong 1989a, 106)

To illustrate Armstrong's view, consider two marbles: one is scarlet, the other is crimson. The scarlet marble has the conjunctive property $M \wedge S$, where its conjuncts are the property of being a marble, M , and the property of being scarlet, S . The crimson marble has the conjunctive property $M \wedge C$, where C is the property of being crimson. On Armstrong's view, the two marbles are partially identical, or partially resembling with respect to the property M . This is because M is a common constituent of $M \wedge S$ and $M \wedge C$.

The selling point of Armstrong's partial identity is capturing an intuitive sense of partial resemblance. Unfortunately, his theory has a restriction: only complex properties can be partially identical, or partially resembling. As Armstrong puts it, "two simple things cannot be partially identical [partially resembling], they must be wholly different or not at all" (1997, 52).

I shall discuss the severity of this restriction in §5.3.2. At the moment, let us consider Armstrong's partial identity as is. Two complex properties partially resemble each other if they share at least a constituent property. The more constituent properties they share, the more they are resembling. Suppose that P is a complex property constituted by A, B, and F, and Q is constituted by X, Y, and F. On Armstrong's view, P and Q share F. More precisely, we could say that P partially resembles Q at a certain degree n , where n is determined by the common constituents of P and Q (it is worth noting that Armstrong claims that resemblance comes in degrees, but he does not specify how to measure it). Now let us suppose to compare P with a complex property G, which is constituted by T, B, and F. In this case, P partially resembles G at a degree m such that $m > n$. This is because P and G share B and F. If we compare P with another complex property P* constituted by A, B, and F, then, in Armstrong's view, P is strictly identical with P*.

The idea of degrees of resemblance demands caution for we cannot consider only the shared constituents. Otherwise we face some implausible consequences. Suppose that the degree of resemblance is given solely by the number of shared constituents. Now consider the properties P, P \wedge Q, and P \wedge Q \wedge S. Properties P and P \wedge Q would have the same degree n of resemblance of P and P \wedge R \wedge S, namely $n=1$. However, this fails to capture the intuitive idea that P and P \wedge Q are more resembling than P and P \wedge Q \wedge S.

To avoid the previous problem, we need to consider the constituents that are shared as well as those that are not. In order to determine the degree of resemblance n of two complex properties P and Q, we can use the formula $n=s/p$, where s is the number of P's and Q's shared constituents and p is the number of P's and Q's possessed constituents. As a result, the degree of resemblance n of P and P \wedge Q is $1/2$, while the degree n of P and P \wedge Q \wedge S is $1/3$. The proposed formula allows us to capture the intuitive sense in which P more closely resembles P \wedge Q than P \wedge Q \wedge S.

Partial resemblance understood as Armstrong's partial identity is reflexive, symmetric, but not transitive. We get reflexivity because every object or complex property share with itself at least a constituent. Partial identity is symmetric: the degree n is determined by the number of properties shared and possessed by two properties or objects x and y . So if x partially resembles y to a degree n then y partially resembles x to a degree n .

For example, if P partially resembles $P \wedge Q$ at degree $n=1/2$, then $P \wedge Q$ partially resembles P at degree $n=1/2$.

Partial resemblance is not transitive, however. If x partially resembles y to a certain degree n , and y partially resembles z to a degree n , it is not always the case that x and z are partially resembling to the same degree n . It is possible that x and z partially resemble each other to a degree m such that $n \neq m$. For instance, if P partially resembles $P \wedge Q$ at degree $n=1/2$ and $P \wedge Q$ partially resembles $P \wedge Q \wedge R \wedge S$ at $n=1/2$, then it is not the case that P does not partially resemble $P \wedge Q \wedge R \wedge S$ at degree $n=1/2$. As it happens, the degree of resemblance of P and $P \wedge Q \wedge R \wedge S$ is $n=1/4$.

Armstrong's partial identity captures an intuitive and plausible sense of partial resemblance. However, it has a limit: it does not allow partial resemblances among simple properties.¹⁸ As I will argue in due course, it is desirable to allow partial resemblances among simple properties. I will show in §5.2.3 that the Dual-Aspect Account is preferable to Armstrong's partial identity theory in this respect. Having clarified the notions of exact and partial resemblance, I will now turn to discuss them from the viewpoint of the Identity Theory and Dual-Aspect Account respectively.

5.2 The Dual-Aspect Account and the Identity Theory on Resemblance

5.2.1 Differences and Commonalities

Every satisfactory theory of properties has to specify the conditions of exact and partial resemblance for objects and properties (§5.1.2–§5.1.3). In what follows, I will examine how the Identity Theory (Chapter 3) and the Dual-Aspect Account (Chapters 3 and 4) accomplish this aim. The two views do not drastically differ for both of them hold that properties are powerful qualities. However, I will show that the Dual-Aspect Account can claim two important advantages: (i) the notions of dispositional and qualitative aspects improve the precision of the resemblance conditions among objects and properties; (ii) it accommodates a greater variety of resemblances for it allows the possibility of partial resemblances among simple properties.

We can draw an initial comparison between the Dual-Aspect Account and the Identity Theory by considering how they differ with respect to these questions:

- (1) In what sense objects can have the same properties?

¹⁸Armstrong's partial identity faces significant difficulties in accommodating quantitative properties (e.g. having a five grams mass). See Eddon (2007; 2013) for a critical examination of this issue.

- (2) What are the conditions for two objects to resemble each other?
 (3) Why do two resembling objects behave in similar ways?

The Identity Theory, in its standard version, is a tropes view (Heil 2003, 137–147; 2003, 152–159; 2012, 93–97; Martin 2008, 44). Resemblances among two simple powerful qualities is a “brute phenomenon” (Heil 2003, 157–158). Resemblance among complex tropes can be accounted in terms of Armstrong’s partial identity (Heil 2003, 156). According to this view, if crimson and scarlet are simple powerful qualities, their similarity cannot be further explained in terms of common constituents. Simple powerful qualities have their exact resemblance “built-in”, which cannot be explained in more basic terms (Heil 2003, 157). However, we have to bear in mind that the Identity Theory is also available for the friend of universals. On this version, two simple powerful qualities are resembling by virtue of being instances of the same universals.

To answer (1), objects can have the same properties in the sense of having exactly resembling powerful qualities. That is, qualitatively identical but numerically distinct powerful qualities.

To answer (2), two objects *a* and *b* resemble each other more or less closely depending on *a*’s and *b*’s exactly resembling powerful qualities. As Heil puts it:

Objects are similar when they possess one or more properties in common. Exactly similar objects, if there are any, share all of their properties, less-than-exactly similar objects share some, but not all of their properties. (Heil 2003, 154)

To answer (3), we need to consider the features of powerful qualities. A powerful quality is an essentially dispositional-and-qualitative property. This is to say that “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (Martin and Heil 1999, 45–46). By having resembling powerful qualities, two objects *a* and *b* have similar dispositionality. That is, *a* and *b* are disposed to manifest similar effects in similar circumstances. The resembling dispositionality accounts for the similarity of *a* and *b*. For example, consider two electrons. Each of them has the property of having a certain charge. Suppose that this property is a powerful quality. By having a certain charge, each electron has the power to produce an electromagnetic force. Note that on the Identity Theory the dispositionality of a powerful quality is identical with its qualitativity. As such, two exactly resembling powerful qualities qualitatively contribute to bearers in the same way.

Now let us consider how the Dual-Aspect Account. Since the Dual-Aspect Account is a version of the powerful qualities view, the answers to (1)-(3) are similar to those of the Identity Theory.

The answer to (1) is the same as the Identity Theory: on the Dual-Aspect Account, objects can have the same properties in the sense of having exactly resembling powerful qualities.

The answer to (2) highlights an important difference between the Dual-Aspect Account and the Identity Theory. The Dual-Aspect Account can specify more accurately the conditions of resemblance for objects by invoking the notions of dispositional and qualitative aspects. As I will illustrate in due course, a beneficial consequence is the possibility of accommodating a greater variety of resemblances than the Identity Theory. I will elaborate these claims in §5.2.2 and §5.2.3. At the moment, it suffices to note that both the Identity Theory and the Dual-Aspect Account accommodate resemblances in terms of exactly resembling powerful qualities.

The answer to (3) is somewhat different. The Dual-Aspect Account invokes the idea of dispositional aspects to account for the dispositionality of objects. Two objects behave similarly when they possess powerful qualities having similar dispositional aspects. The dispositional aspect of a property captures the idea that a bearer has some powers by virtue of possessing that property. In more precise terms:

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

For example, on the Dual-Aspect Account, we can say that two electrons behave similarly by virtue of possessing powerful qualities with resembling dispositional aspects. However, the Dual-Aspect Account is not committed to the identity between the dispositional and the qualitative. Therefore, it is possible that two powerful qualities have resembling dispositional aspects but different qualitative ones.

An interesting and advantageous consequence is that there can be objects with similar dispositionality but different qualitativity. Suppose that every shade of red has the dispositional aspect of disposing a bearer to reflect light at a certain wavelength. Scarlet and crimson would be exactly resembling with respect to this dispositional aspect. Every scarlet object and every crimson one is disposed to reflect light at the same wavelength. However, the ways in which scarlet and crimson contribute to the qualitativity of their bearers are different. The qualitative aspects of scarlet, namely how a scarlet contributes to how a bearer

is like, is different from the qualitative aspect of crimson. A scarlet marble and a crimson one are similarly disposed to reflect light at a certain wavelength. Yet they are qualitatively different: one looks scarlet, the other crimson.

To facilitate the discussion, a brief repetition of what aspects are might be useful (for a detailed discussion, see Chapter 3, §3.2). On the conception I wish to defend in this work, aspects are ways of being of properties. They can be regarded as ontologically lightweight (or non-ontic) higher-order properties with a few qualifications:

- (1) Aspects supervene on properties. Therefore, on the standard view that what supervenes does not constitute a genuine addition to being, aspects are lightweight entities (cf. Armstrong 1982, 7; cf. Armstrong 1997, 11–13).
- (2) Aspects are ontologically dependent on the properties of which they are aspects. They cannot exist without properties.
- (3) It is the nature of a property that determines the aspects it has. Consequently, a property has the same aspects in every possible world where it exists.

I defended and motivated (1)-(3) in Chapter 3 (§3.2), and discussed other conceptions of aspects in Chapter 4 (§4.2). Here I shall not repeat the discussion. The notions of dispositional and qualitative aspects allow us to make more precise the claim that that “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (Martin and Heil 1999, 45–46). Since I have already stated *Dispositional Aspect*, here I will just repeat the formulation of a *Qualitative Aspect*.

Qualitative Aspect: a property P has some qualitative aspects if and only if the possession of P qualitatively contributes to the make-up of every bearer of P.

Here is an example to illustrate the proposed view. Suppose that having a certain gravitational mass is a powerful quality. On the Dual-Aspect Account, it has dispositional and qualitative aspects. For example, it has the dispositional aspect of disposing a bearer to exert and experience a gravitational force, and it has the qualitative aspect, for example, of conferring upon a bearer a certain a gravitational potential energy which can be measured in joules.¹⁹ These aspects are ways the property of having a certain gravitational mass is. They supervene on it. Therefore, they are ontologically lightweight.

¹⁹ The example is merely illustrative. The reader is free to think of a more suitable candidate of a qualitative aspect of gravitational mass.

Crucially, these aspects are ontologically dependent on and determined by the nature of having a certain gravitational mass.

So far, I presented an overview of how the Identity Theory and the Dual-Aspect Account deal with resemblances among properties and objects. In what follows, I will examine how these views regiment the conditions of exact and partial resemblance among properties. To highlight differences and commonalities between them, I will consider the two cases mentioned at the beginning of this chapter: the first is the case of partially resembling properties such as scarlet and crimson, the second is the case of partial resemblances among simple properties.

5.2.2 *Exact Resemblance*

Exact resemblance captures the loose sense of identity, namely the sense in which two entities are qualitatively identical but numerically distinct. This is the sense in which Mary and Miriam may wear qualitatively identical but numerically distinct sweaters. In §5.1.2, I proposed the following formulations for exact resemblance.

Exact Resemblance of Objects: for two objects a and b , a exactly resembles b if and only if for any property P of a , there is a property Q such that b has Q and P exactly resembles Q , and vice versa.

Exact Resemblance of Properties: for two properties P and Q , P exactly resembles Q if and only if P is a duplicate of Q .

On the powerful qualities view, we can just replace “property” with “powerful quality” in the above conditions. Accordingly, *Exact Resemblance of Objects* states that two objects a and b exactly resemble each other just in case a and b have exactly resembling powerful qualities; *Exact Resemblance of Properties* states that powerful qualities P and Q are exactly resembling just in case P and Q are duplicates. We can analyse resemblances among complex powerful qualities in terms of their common constituents, which are simple powerful qualities (Heil 2003, 156–157).

Now let us focus on the Identity Theory. In its standard version, the Identity Theory takes resemblances among simple powerful qualities as primitive. This is because powerful qualities are held to be tropes (Heil 2003, 137–147; 2003, 152–159; 2012, 93–97; Martin 2008, 44). Therefore, there is nothing else that accounts for the fact that two simple powerful qualities have exactly resembling dispositionality and qualitativity. A friend of universals

could say that two simple powerful qualities are exactly resembling by virtue of being instances of the same universal powerful quality. This would ensure that the two simple powerful qualities have exactly resembling dispositionality and qualitativity. Arguably, the identity theorist embraces the following principle or something akin.

Exact Resemblance of Powerful Qualities: for two powerful qualities P and Q, P exactly resembles Q if and only if (i) P's dispositionality exactly resembles Q's dispositionality, and (ii) P's qualitativity exactly resembles Q's qualitativity.

Given *Exact Resemblance of Powerful Qualities*, the charge of a particle *a* exactly resembles the charge of a particle *b* just in case *a*'s dispositionality and qualitativity and *b*'s dispositionality and qualitativity are exactly resembling.

Now let us consider the Dual-Aspect Account. Its most significant advantage is the possibility of invoking aspects to improve the conditions of the exact resemblance among powerful qualities. Recall that a powerful quality may have more than one dispositional or qualitative aspect. This is to say that a powerful quality may empower a bearer and qualitatively contribute to it in different ways. Plausibly, we can regard a powerful quality's dispositionality as the conjunction of all its dispositional aspects. In same vein, we can think of its qualitativity as the conjunction of all its qualitative aspects. Accordingly, we can reformulate *Exact Resemblance of Powerful Qualities* can be reformulated as follows (where "DA" stands for Dual-Aspect Account).

DA-Exact Resemblance: For two powerful qualities P and Q, P exactly resembles Q if and only if (1) for each dispositional aspect α of P, there is a dispositional aspect α^* of Q such that α exactly resembles α^* , and vice versa, and (2) for each qualitative aspect β of P, there is a qualitative aspect β^* of Q such that β exactly resembles β^* , and vice versa.

The proposed formulation may look intricate, but it merely states that two powerful qualities are exactly resembling just in case they have exactly resembling dispositional and qualitative aspects. For example, the charges of two particles exactly resemble just in case both properties empower the particles in the same way and qualitatively contribute to their make-up in the same way.

The Dual-Aspect Account offers a condition for resemblance among simple powerful qualities in terms of their aspects. To emphasise the advantage of this view over the Identity

Theory, let us consider the case of two intuitively resembling properties such as scarlet and crimson.

One can plausibly argue that scarlet and crimson have something in common. For example, they are both shades of red. A satisfactory account of resemblance should preserve this intuition. Both the Identity Theory and the Dual-Aspect Account have the theoretical resources for satisfying this requirement. However, as I will explain, the Dual-Aspect offers a preferable framework (I will discuss this case in more detail in §5.2.3).

On the Identity Theory, there are two ways in which scarlet and crimson can be partially resembling. First, it could be that scarlet and crimson are complex powerful qualities sharing at least a common constituent (Heil 2003, 154–157). The common constituent would be a simple powerful quality. Thus scarlet and crimson would be resembling by virtue of having at least an exactly resembling simple powerful quality. Second, it could be that scarlet and crimson are simple powerful qualities. The standard version of the Identity Theory would hold that their intuitive resemblance is a “brute phenomenon” (Heil 2003, 158). This is because powerful qualities, on the standard version, are tropes. Simple tropes primitively resemble other simple tropes. A version of the Identity Theory that adopts a conception of universals would hold the same: if scarlet and crimson are simple universals, their intuitive resemblance cannot be explicated further.

The Dual-Aspect Account accommodates the partial resemblance between scarlet and crimson in a similar way to the Identity Theory, if these are complex properties. Namely, the dual-aspect theorist can appeal to exactly resembling powerful qualities of scarlet and crimson to account for the intuitive resemblance. However, the dual-aspect theorist could claim that having exactly resembling powerful qualities means having powerful qualities with exactly resembling dispositional and qualitative aspects. Here the advantage is an improvement in precision.

A more significant advantage concerns the possibility that scarlet and crimson are simple properties. The dual-aspect theorist can do better than the identity theorist, who claims that the intuitive resemblance is brute. This is because the dual-aspect theorist can invoke dispositional and qualitative aspects to account for the intuitive resemblance of scarlet and crimson.

On the Dual-Aspect Account, every powerful quality has some dispositional and qualitative aspects. This holds for complex powerful qualities as well as simple ones. Thus crimson and scarlet can be simple powerful qualities and yet possess dispositional and qualitative aspects. Here it is crucial to recall that the claim that powerful qualities have aspects should not be understood in the same fashion as the claim that tables have legs:

aspects are ontologically lightweight as they supervene on properties (Chapter 3, §3.2). Therefore, the claim that a property has aspects does not amount to the view that it is “made of” some constituents. To put it differently, a property can be simple and yet having aspects without being a complex one.

To return to the previous case, this conception of aspects permits that scarlet and crimson are simple and yet partially resembling. This is possible because scarlet and crimson may have some exactly resembling aspects. To illustrate this claim, let us consider an example from colour science. Shades of red have the same degree of hue, but differ in brightness and saturation. We can regard having a certain hue, brightness and saturation in terms of aspects of every shade of red. Here we are not forced to decide which of these aspects is dispositional and which one is qualitative. The point is that the dual-aspect theorist can claim that crimson and scarlet are partially resembling with respect to the exactly resembling aspect of having a certain degree of hue. This seems to capture the intuition that scarlet and crimson are partially resembling in spite of being simple. The Dual-Aspect Account appears to offer a more informative analysis of the partial resemblance of scarlet and crimson, if these are simple properties.

The Dual-Aspect Account may claim an advantage also with respect to the analysis of exactly resembling powerful qualities. On the Identity Theory, it is a “basic, irreducible fact” whether two simple powerful qualities are exactly resembling (Heil 2003, 157). Namely, nothing else constitutes the exact resemblance of two simple powerful qualities. In contrast, on the Dual-Aspect Account, it is possible to account for the exact resemblance of simple powerful qualities in terms of their aspects: two simple powerful qualities are exactly resembling just in case they have exactly resembling aspects (see the formulation of *DA-Exact Resemblance*).

In spite of its merits, an analysis of resemblance in terms of aspects has some inescapable limitations. We are neither infallible nor all-knowing. Therefore, our discriminating abilities constrain the evaluation of resemblances. Properties might have aspects that are unknowable to us or we might erroneously identify aspects where there are none or we may confuse dispositional aspects for qualitative ones. Moreover, the notions of *Dispositional Aspect* and *Qualitative Aspect* (§5.2.1) do not help us adjudicating some controversial disputes. Consider the case of colours again. Someone might think that having a certain hue is a qualitative aspect: it can be argued that it is a matter of how a shade of colour looks like. However, someone else may argue that having a certain hue is a dispositional aspect: we can characterise it in terms of dominant wavelength, which depends on how light is reflected. There is no straightforward strategy to deal with difficult cases

such as that of colours. We can expect similar difficulties when we analyse resemblances among the aspects of fundamental properties. Think of charge. In the previous chapters, I have often indicated having a certain quantity of charge, which can be measured in coulombs, as an example of a qualitative aspect. But someone could defend a dispositional conception of having a certain quantity of charge. Note, however, that the tenability of the Dual-Aspect Account requires only that all fundamental properties essentially have some dispositional and qualitative aspects. What these aspects are cannot be decided from the armchair. (I will discuss some arguments in favour of the thesis that all fundamental properties are essentially dispositional and qualitative in Chapter 6).

A more significant objection is that the Dual-Aspect Account fails to give us a genuine explanatory advantage with respect to the Identity Theory. An opponent could argue the Dual-Aspect Account merely reformulates the resemblance conditions in terms of aspects. The two views are therefore on the same footing: they cannot *explain* exact resemblances among simple properties in more basic terms. The objection is fair. But it downscales unfairly the merit of the Dual-Aspect Account. The improvement in precision of the condition of resemblance remains a decisive choice-point: even if the Dual-Aspect Account and the Identity Theory were explanatorily on a par (i.e. both views cannot explain resemblances among properties in more basic terms), the Dual-Aspect Account would offer a more precise apparatus to assess when two powerful qualities are exactly resembling. Precision is a virtue that we should privilege. As such, the previous worry does not give us strong reasons for rejecting the Dual-Aspect Account.

There is a related issue that it is worth addressing. In order to appreciate the force of the previous explanatory worry, we need to recall a peculiar feature of the proposed conception of aspects. On the Dual-Aspect Account, it is the nature of a property that determines its aspects (Chapter 3, §3.2.1). We can reformulate this claim by saying that aspects metaphysically depend on properties. The kind of metaphysical dependence that I have in mind shares an important feature with the notion of *metaphysical grounding*: it captures the idea that a property has certain aspects *in virtue of* its nature. However, the Dual-Aspect Account is not committed to the view that the relation that obtains between a property and its aspects *is* grounding (for an overview on metaphysical grounding, see Bliss and Trogon 2014).

A reason for avoiding the commitment to a grounding relation between a property and its aspects is that grounding is widely held to be an explanatory relation (the precise connection remains opaque. For a more detailed discussion, see Fine 2001, 2012, deRossett 2013; Litland 2013; Dasgupta 2014; Thompson 2016). On such a conception, there is an

explanatory connection between a ground and what is grounded: the ground explains or backs an explanation of what is grounded. For example, if the fact that Mary is mortal is grounded in the fact that Mary is a human, then the fact that Mary is human explains, in some sense, the fact that she is mortal. To put it differently, we can say that Mary is mortal *because* she is a human.

Someone might think that grounding is tailored to the view that aspects are metaphysically determined by properties. For instance, we could claim that the fact that charge has a certain nature explains why its possession disposes a bearer to produce an electromagnetic force. While this view may be attractive at first glance, it raises a problem with respect to the proposed analysis of resemblances: if aspects are grounded in properties, then they cannot *explain* resemblances among properties. It seems that we get the explanation the wrong way. If properties ground their aspects, and grounding is an explanatory relation, then it is the resemblance of properties that explains the resemblances among aspects.

The explanatory objection is fair and instructive. Fortunately, there are two straightforward strategies to escape it. First, we could abandon the idea that the metaphysical dependence that ties together aspects and properties is explanatory. Second, we could give up the idea that the Dual-Aspect Account *explains* resemblances among properties in terms of aspects.

Both strategies fit nicely with the version of the Dual-Aspect Account that I have outlined so far. The metaphysical dependence between properties and aspects is not meant to be explanatory. It merely shares the systematic connection and determination with grounding. On the Dual-Aspect Account, the dependence between aspects and a property holds in virtue of a property's nature. But it does not follow that this dependence is explanatory in the same fashion as grounding is taken to be (I shall not repeat here the motivations for embracing the proposed conception of aspects. For a more detailed discussion, see Chapter 3 §3.2). It is not my claim that we can reduce, in an explanatory sense, resemblances among properties to resemblances among aspects. Rather my claim is more modest, namely that we can formulate more precise resemblance conditions by appealing to the Dual-Aspect Account's notions of dispositional and qualitative aspects. The advantage is an improvement in precision rather than in explanation. Yet this is a choice-point in favour of the Dual-Aspect Account as compared to the Identity Theory.

5.2.3 *Partial Resemblance*

Objects and properties resemble each other more or less closely. For example, Simone de Beauvoir more closely resembles Simone Weil than Hannah Arendt. Simone de Beauvoir and Simone Weil are both French, mortal, and philosophers. Hannah Arendt is mortal and a philosopher, but she is not French. Scarlet more closely resembles crimson than cerulean. Scarlet and crimson are both shades of red while cerulean is not. And so on and so forth.

The Dual-Aspect Account gives us a serviceable machinery for analysing partial resemblances among properties. In what follows, I will argue that it has two merits that make it preferable to non-aspect views: (1) it accommodates a greater variety of resemblances; (2) it allows the possibility of partially resembling simple properties. To illustrate these advantages, I will discuss a comparison between the Dual-Aspect Account and the Identity Theory.

In its canonical form, the Identity Theory holds that properties are tropes (Heil 2003, 137–147; 2003, 152–159; 2012, 93–97; Martin 2008, 44). Accordingly, resemblances among simple powerful qualities are not explainable in more basic terms. Simple properties “are not similar in virtue of anything” (Heil 2003, 152). If scarlet and crimson were simple powerful qualities, there would be nothing in virtue of which they would be partially resembling. Such a partial resemblance would be a “brute phenomenon” (Heil 2003, 158). However, even on a universals version of the Identity Theory, the intuitive partial resemblance would be a brute fact if scarlet and crimson were simple. As I will explain, the Dual-Aspect Account admits the possibility of simple and yet partially resembling properties, and accounts for it in terms of aspects. Thus if scarlet and crimson were simple, it would be still possible for them to be partially resembling by virtue of having some resembling aspects.

Note that the Identity Theory can accommodate partial resemblances among complex properties in terms of common constituents. The same strategy is viable to the Dual-Aspect Account (§5.1.3; Heil 2003, 156–159). The difference between these views concerns the kind of properties that can be partially resembling: on the Identity Theory *only* complex properties can be partially resembling; in contrast, on the Dual-Aspect Account, *both* complex and simple properties can be partially resembling. To illustrate this claim, let us consider again the resemblance of scarlet and crimson.

Intuitively, scarlet and crimson are partially resembling. After all, they are both shades of red. We ought to preserve this intuition. Thus it is reasonable to hold that a satisfactory analysis of resemblance should give us the result that scarlet and crimson are

partially resembling. The problem is that the Identity Theory can deliver this result only if scarlet and crimson are complex properties. By contrast, the Dual-Aspect Account does not suffer from such a restriction.²⁰

Let us suppose that shades of colour can be identified with respect to their degree of hue, brightness and saturation. This is a plausible view: in computer graphics, for example, the most common models for representing colours are based on these three features. By assigning a value to hue, brightness and saturation, it is possible to represent a broad array of colours (broad enough to comprise the shades of colour of the visible spectrum). Shades of red have the same degree of hue. They differ with respect to the degree of brightness and saturation.

Call H, B, and S the property of having a certain hue, a certain brightness, and a certain for saturation respectively. If scarlet were the complex property $H \wedge B \wedge S$ and crimson were $H \wedge B^* \wedge S^*$, the identity theorist could argue that they are partially resembling with respect to H, which is a common constituent. So far, so good. However, if scarlet and crimson were simple properties (i.e. properties that lack any constituents), the identity theorist could not tell us anything particularly illuminating. Scarlet and crimson could be partially resembling by virtue of having a common constituent. The partial resemblance between scarlet and crimson would be brute.

The Dual-Aspect Account can do better. If scarlet and crimson were $H \wedge B \wedge S$ and $H \wedge B^* \wedge S^*$ respectively, the dual-aspect theorist can appeal to the strategy of considering H as a common constituent. But if scarlet and crimson are simple powerful qualities, they would still have dispositional and qualitative aspects. On the proposed conception, aspects supervene on properties; once we have a property, we get its aspects—irrespective of whether the property is simple or complex (Chapter 3, §3.2). It is therefore possible to regard having a certain hue, brightness, and saturation as aspects of scarlet and crimson. Call α the aspect of having a certain degree of hue, β having a certain brightness, and γ having certain saturation. Here we do not need to decide whether these aspects are dispositional or qualitative. Since scarlet and crimson have the same degree of hue, they are resembling with respect to α . However, they would differ with respect to β and γ . Where scarlet has β and γ , crimson has β^* and γ^* instead. The Dual-Aspect Account is able to account for the partial resemblance of scarlet and crimson even if even they were simple properties. Of course, the point generalises: on the Dual-Aspect Account simple properties can be partially resembling

²⁰ I acknowledge that someone might protest the example. However, the familiarity of scarlet and crimson is beneficial for illustrative purposes. The reader is encouraged to run the discussion by using a more suitable example of partially resembling properties.

with respect to their aspects. In light of this discussion, we can formulate a condition for partially resembling powerful qualities.

Partial Resemblance of Powerful Qualities: for two powerful qualities P and Q, P partially resembles Q if and only if there is at least one dispositional or qualitative aspect α of P and there is at least one dispositional or qualitative aspect of β of Q such that α exactly resembles β .

The proposed formulation allows some interesting possibilities: two powerful qualities can have exactly resembling dispositional aspects but different qualitative ones, or the other way round. Imagine two possible worlds w and w^* . Suppose that every shade of red has the same dispositional aspects in w and w^* . Suppose also that every shade of red in w^* has the qualitative aspects of every shade of green in our world. Accordingly, red objects reflect light at the same wavelength in both w and w^* . But they look like as they were green in w^* . Every shade of red in w is dispositionally resembling every shade of red in w^* , but shades of red in w and w^* are not qualitatively resembling (this is an adaptation from inverted qualia scenarios that are often discussed in philosophy of mind. For an overview, see Jackson 1982; Shoemaker 1982; Block 1990).

The crucial advantage of the Dual-Aspect Account over the Identity Theory is the possibility of accommodating a greater variety of partial resemblances. On the Identity Theory, dispositional and qualitative aspects are identical. As such, this view does not allow that some properties may be partially resembling with respect to their dispositionality, but qualitatively different. In contrast, the Dual-Aspect Account permits this possibility. On this view, some properties can be partially resembling with respect to some dispositional aspects and exactly resembling with respect to their qualitative ones, or the other way round. Of course, a view that accommodates a greater variety of resemblances is preferable.

Overall, it seems that the Dual-Aspect Account accommodates more adequately the partial resemblance between properties such as scarlet and crimson. However, someone might protest against the example: scarlet and crimson are intuitively complex properties. In this case, the Identity Theory faces no problem in accommodating their partial resemblance in terms of common constituents.

The objection is fair: scarlet and crimson are not paradigmatic cases of simple properties. Here it is worth recalling that the choice of these properties has been motivated by practical reasons. The familiarity of scarlet and crimson is helpful to illustrate the merits of the Dual-Aspect Account. The reader is free to run the discussion by using more suitable

examples of properties. However, even if scarlet and crimson were indeed complex, the Dual-Aspect Account would have the advantage of specifying more precisely the conditions of their partial resemblance. The dual-aspect theorist can argue that partial resemblance among complex properties can be accounted in terms of resembling aspects. The condition of *Partial Resemblance of Powerful Qualities* fits simple properties as well as complex ones. This is an improvement in precision with respect to the Identity Theory.

The related advantage of the Dual-Aspect Account is that it allows the possibility of partially resembling simple properties. This is a merit with respect to every non-aspect view of properties. However, one might wonder whether it is significant. There are at least two reasons for believing so: (1) it is metaphysically possible that there are simple and yet partially resembling properties. An account that specifies the condition for partial resemblance among simple properties is therefore preferable to one that does not; (2) partial resemblances among simple properties may have some beneficial implications with respect to our theorizing about the world. As such, we should privilege an account that is able to accommodate them.

To illustrate the previous claims, imagine the following case. Consider gravitational mass and charge, which are paradigmatic examples of simple properties (that is, properties that have no other properties as constituents). Let us also stipulate that gravitational mass and charge are powerful qualities. Now suppose that a group of physicists is working on a unified theory Ω of gravitational mass and charge. Ω -theorists believe that mass and charge can be unified in accordance with their degree of resemblance. In particular, the Ω -theorist holds that the degree of resemblance determines the formalism that describes the unified interaction of these properties. The Identity Theory is not particularly helpful for the purposes of Ω -theorists. If gravitational mass and charge were partially resembling, the Identity Theory could not specify to what degree for their partial resemblance would be brute. Fortunately, the Dual-Aspect Account represents a better option for Ω -theorists.

From the viewpoint of the Dual-Aspect Account, gravitational mass and charge have some dispositional and qualitative aspects even if they were simple properties. The more aspects they share, the more they are similar. Here is a putative shared aspect: both gravitational mass and charge dispose a bearer to exert and experience a force in accordance to inverse-square laws (e.g. Newton's Law of gravitation and Coulomb's Law). A massive particle is disposed to exert and experience a force which is inversely proportional to the square of its distance from another massive particle. The same is true for a charged particle. The dual-aspect theorist can argue that this is an exactly resembling aspect that gravitational mass and charge share. By having such a common aspect, gravitational mass and charge are

partially resembling. We can determine the overall degree of resemblance between charge and gravitational mass by considering the number of shared and possessed aspects. This is good news for the Ω -theorist.

There are at least two objections to the case of theory Ω . First, one might argue that gravitational mass and charge are *not* powerful qualities. The response is two-fold: (i) it *does* seem that gravitational mass and charge have dispositional as well as qualitative aspects. Both properties empower their bearers in distinctive ways and at the same time being massive and being charge contribute to the qualitative make-up of their bearers; (ii) it is possible to concoct a similar scenario by considering other plausible candidates of powerful qualities. Of course, if one denies powerful qualities *tout court* the previous case does not get off the ground. But the arguer would face again the question of accommodating partial resemblances among simple properties. The Dual-Aspect Account has the theoretical resources for dealing with this case. This objection highlights at most the inadequacy of the example.

The second objection concerns the supposition that gravitational mass and charge are simple properties. Someone could argue that these properties are conjunctive. A common conjunct of gravitational mass and charge may be the property of disposing a bearer to exert and experience a force in accordance to an inverse square law. If so, the Identity Theory is as serviceable as the Dual-Aspect Account for the purposes of Ω -theorists. One might press the objection further and claim that every simple property will turn out to be complex in light of future discoveries. For all we know, it might well be that future physics will tell us that mass and charge are in fact complex properties. If that is the case, then the advantage of the Dual-Aspect Account is illusory. This objection is more compelling than the previous one: we cannot conclusively rule out the possibility that every simple property will turn out to be complex. Fortunately, there are two strategies for worrying less about it.

The first strategy is to defend the existence of simple properties. For example, current physics is treating putative fundamental properties such as charge, mass, and spin as lacking any constituent properties. Future physics is unlikely to reverse this trend. In light of this consideration, we can stipulate that mass and charge in the example of theory Ω can be regarded as placeholders for simple properties.

The second strategy is to make a conditional claim: *if* there were simple properties, then the Dual-Aspect Account would be able to specify the condition for their partial resemblances. The Identity Theory would lack the theoretical resources for doing so. As such, the Dual-Aspect Account is preferable. This strategy does not force us to rule out the

metaphysical possibility that properties are infinitely complex. But in same vein, it preserves the metaphysical possibility that there are simple properties.

Overall, it is possible to defend the merits of the Dual-Aspect Account. To repeat, its analysis of resemblance has two decisive advantages: (1) it specifies in more precise terms the partial resemblance conditions as compared to the Identity Theory; (2) it allows the possibility of partially resembling properties. This represents an advantage with respect to the Identity Theory and every other non-aspects views of properties.

So far the discussion focused on the Dual-Aspect Account and the Identity Theory. However, the Dual-Aspect Account's analysis of resemblance is preferable to views that do not endorse a conception of powerful qualities. To illustrate this claim, I will now turn to consider Armstrong's theory of partial identity. As it will become clear, the Dual-Aspect Account has some important merits that make it superior.

5.2.4 *Armstrong's Partial Identity*

David Armstrong's theory of universals offers a systematic framework for analysing resemblances (1978; 1989a; 1997). Here it is not possible to offer an exhaustive overview of Armstrong's metaphysics. For the purpose of this chapter, the focus will be on Armstrong's notion of *partial identity*, which captures a natural way of thinking of partial resemblances among properties (Armstrong 1989a, 102–107; 1997, 51–57; see also §5.1.3). This is the view that partial resemblances among properties can be accounted in terms of shared common constituents, which are themselves properties. Other differences between Armstrong's theory of universals and the Dual-Aspect Account can be omitted here (for a comparison between Armstrong's theory of universals and trope views, see Armstrong 1978b, Chs. 7-11-20-21-22).

To begin with, let us consider a general overview of Armstrong's view on resemblance by answering (1)-(3):

- (1) In what sense objects can have the same properties?
- (2) What are the conditions for two objects to resemble each other?
- (3) Why two resembling objects behave in similar ways?

Armstrong conceives of properties as universals. Therefore, distinct objects can have one and the same property. Thus the answer to (1) is something along the following lines: objects can have the same properties in the sense of having numerically identically universals

(§5.1.1). For example, the negative charge of an electron is one and the same with the negative charge of every other electron.

Armstrong's conception of properties of universals also bears on (2). The degree of resemblance between two objects is determined by the number of shared universals. The more universals Mary and Miriam share, the more they are similar. Since properties are held to be universal, the sharing in question is to be understood literally. For example, Mary and Miriam share the property of being a human in the sense of having the same universal.

To answer (3), we need to consider Armstrong's account of dispositionality (cf. Armstrong 1997, 69–85). The dispositions associated with properties depend on contingent laws of nature. For example, the fact that charge disposes to generate an electromagnetic force holds in virtue of a contingent law of nature that relates charge and the property of generating an electromagnetic force. Two resembling objects behave similarly because they instantiate strictly identical properties which are governed by similar laws of nature. For example, charge abides by Coulomb's Law. In Armstrong's view, every charged object shares one and the same universal charge. Thus the behaviour of every charged object is similar because every instance of charge obeys Coulomb's Law.

The differences between Armstrong's view and the Dual-Aspect Account are evident. However, different answers to (1)–(3) do not give us compelling reasons for favouring either view. A decisive choice-point in favour of the Dual-Aspect Account concerns partial resemblances among properties: in Armstrong's view, only complex properties can be partially resembling; in contrast, on the Dual-Aspect Account, both complex and simple properties can be partially resembling. The Dual-Aspect Account is therefore able to accommodate a greater variety of resemblances than Armstrong's theory.

According to Armstrong, complex properties can be partially resembling or "partially identical" to other complex or simple properties in virtue of sharing some common constituent, which is a simple property (Armstrong 1898, 102–107; 1997, 51–57). Conjunctive properties are examples of complex properties. For instance, properties $P \wedge Q$ and $P \wedge T$ are partially resembling with respect to P : P is a simple property which is a common constituent of $P \wedge Q$ and $P \wedge T$. But also $P \wedge Q$ and P are partially resembling; this is because P is strictly identical with P in $P \wedge Q$. We can formulate Armstrong's condition for partial identity as follows.

Partial Identity: For every complex property P and for every complex or simple property Q, P is partially identical to Q if and only if there is at least a constituent F of Q and there is at least a constituent F* of Q such that (i) F is strictly identical with F* or (ii) F is strictly identical with Q.

To illustrate *Partial Identity*, let us consider the example of scarlet and crimson. Suppose that being scarlet is the complex property $H \wedge B \wedge S$ and being crimson is $H \wedge P \wedge Q$. In accordance to *Partial Identity*, scarlet and crimson are partially identical with respect to H. Namely, the property H is a common constituent of scarlet and crimson. Armstrong's view is therefore able to accommodate the intuitive partial resemblance between scarlet and crimson (according to *Partial Identity*, the complex property $H \wedge B \wedge S$ is also partially identical to H).²¹

The degree of resemblance of complex properties is determined by the shared constituents. If scarlet and crimson are respectively $H \wedge B \wedge S$ and $H \wedge P \wedge Q$, then they have the same degree of resemblance. We need to consider the constituents that are both shared *and* possessed; otherwise, we face some implausible consequences. If we consider only the shared constituents, then properties H, $H \wedge P$ and $H \wedge P \wedge Q$ would have the same degree of resemblance for they have the same number of common constituents. This does not seem quite right. Intuitively, $H \wedge P$ resembles more closely $H \wedge P \wedge Q$ than H. This is an intuition that we should preserve. In order to do so, we need to consider also the constituents that H, $H \wedge P$, and $H \wedge P \wedge Q$ do not share. $H \wedge P$ resembles more closely $H \wedge P \wedge Q$ than H because there is just one constituent, Q, that $H \wedge P$ does not have. Property H lacks two constituents as compared to $H \wedge P \wedge Q$: P and Q. Therefore, H less closely resembles $H \wedge P \wedge Q$.

Armstrong gives an account of partial resemblance by restricting *Partial Identity* to complex properties. Resemblance among simple properties is all or nothing: either simple properties are strictly identical or they are not. As Armstrong puts it, "two simple things cannot be partially identical [partially resembling], they must be wholly different or not at all" (Armstrong 1997, 52). Thus a simple property is identical either with another simple property or it is not. A consequence of this view is that it is not possible that two simple properties are partially resembling, or partially identical.

²¹ Armstrong claims that his notion of partial identity offers a serviceable machinery to account for the relation between determinables and determinates (i.e. properties such as red and scarlet; cf. Armstrong 1997, 51–55). I shall not explore this claim here for it is not my aim to elucidate the determinable–determinate relation. But it is worth flagging that Armstrong's account of determinables faces a number of significant challenges (see Eddon 2007 and 2013 for a more detailed discussion of this topic).

The restriction of partial resemblance to complex properties is unwelcome for two reasons. First, it imposes an arbitrary constraint on the principle that resemblance comes in degree (cf. Armstrong 1997, 47). What grounds do we have for ruling out the possibility that simple properties may be partially resembling? It is a genuine metaphysical possibility that simple properties are partially resembling. As such, we should favour an analysis of resemblance that is able to accommodate it (§5.2.3).

Second, partial resemblances among simple properties may have beneficial implications. This is a reason for admitting them. Think again of the case of theory Ω discussed in §5.2.3. An account that offers conditions for simple and yet partially resembling properties is therefore preferable to one that it does not. The Dual-Aspect Account is up to the task. In contrast, Armstrong's partial identity theory lacks the theoretical resources for doing so (Here I shall not repeat the case of theory Ω . See §5.2.3).

A possible objection from Armstrong's viewpoint is that properties as thought of in accordance to the Dual-Aspect Account are not simple: by having aspects, powerful qualities are rather complex. As such, the advantage of the Dual-Aspect Account would be illusory: the alleged partial resemblances among simple properties are rather resemblances among complex properties. These can be accounted in terms of *Partial identity*.

This objection is ineffective, however. A powerful quality does not have aspects in the same fashion as a complex property has constituents. Armstrong suggests that the relation between the constituents of a complex property is a mereological one or similar to it (1997, 51–52). It is therefore plausible to regard the constituents of a complex property as analogous to the parts that compose a whole. But aspects do not stand to properties in the same fashion as parts stand to wholes.

On the proposed conception, aspects supervene on properties and ontologically depend on them (Chapter 3, §3.2). By contrast, if aspects were the constituents of powerful qualities, then powerful qualities would be dependent on them. On the Dual-Aspect Account, this is to get things the wrong way: aspects depend on properties, but the opposite does not hold. Therefore, aspects should not be regarded as the constituents of powerful qualities. The upshot is that powerful qualities are not complex in the sense of having aspects as constituents. Of course, this does block the possibility that some powerful qualities may be complex in the sense of having simple powerful qualities as constituents. But a simple powerful quality has aspects and yet it is not complex.

By admitting partial resemblances among simple properties, the Dual-Aspect Account is preferable to Armstrong's theory of partial identity. Here the moral is not Armstrong's *Partial Identity* should be rejected. The comparison between the Dual-Aspect

Account and Armstrong's account of partial resemblance had a different purpose: it stressed the merits of the Dual-Aspect Account's analysis of resemblance with respect to a non-aspect view that differs more significantly from the Identity Theory.

By having aspects in its framework, the Dual-Aspect Account can claim two advantages with respect to the Identity Theory, Armstrong's theory of partial identity, and other non-aspect views of properties: (1) it is able to accommodate a greater variety of resemblances among properties, and (2) it allows the possibility of partially resembling simple properties. These merits show the theoretical utility of the conception of aspects I wish to defend in this dissertation.

5.3 A Short Summary of the Dual-Aspect Account

The discussion of the analysis of resemblance concludes the overview of the Dual-Aspect Account. In this chapter, I formulated the conditions of exact resemblance and partial resemblance (§5.1). Then I discussed a comparison between the Dual-Aspect Account and the Identity Theory, and argued for the superiority of the former over the latter (§5.2). The introduction of dispositional and qualitative aspects allows us to improve the precision the resemblance conditions among properties. This has a beneficial consequence: the Dual-Aspect Account is able to accommodate a greater variety of resemblances than the Identity Theory (§5.2.1-§5.2.2). To further stress the merits of the Dual-Aspect Account's analysis of resemblance, I examined a comparison with Armstrong's theory of partial identity (§5.2.4). I showed that the Dual-Aspect Account has two overall advantages: (1) it provides more precise conditions for resemblance among properties; (2) it allows the possibility of partially resembling simple properties. These merits, I claimed, are evidence of the theoretical utility that aspects bring us.

Heil claims that there are three ways to measure the "success" of an ontological view (2012, 288).²² First, the extent to which a view is internally coherent. Second, the plausibility of the resulting "big picture" world-view from the perspective of the view in question. Third, the applicability of the view to other pressing philosophical issues. The Dual-Aspect Account fares well with all of them.

In the literature, the Identity Theory faces the charge of contradiction because of the commitment to a controversial identity claim between the dispositional and the qualitative. In Chapter 3, I showed that the introduction of aspects clears the way to the Dual-Aspect

²² The notion of "success" is informal. It seems to capture some canonical theoretical virtues such as plausibility, explanatory power, and applicability.

Account of powerful qualities that is not committed to the *Identity_o*—which is the ontological reading of the identity claim held by the powerful qualities theorist.

Identity_o: there is no real distinction between a property P's dispositional aspect and P's qualitative aspect, and each of these aspects belongs to one and the same property P.²³

On the proposed conception, aspects are ways of being of properties. They can be regarded as higher-order ontologically lightweight properties. This is because aspects supervene on the properties of which they are aspects. In addition, aspects have two other important qualifications: (i) they ontologically depend on properties; and (ii) it is the nature of a property that determines the aspects it has. The notions of dispositional and qualitative aspects capture the idea that “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (Martin and Heil 1999, 45–46). I proposed to regiment the possession of a property and its dispositional and qualitative aspects as follows.

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

Qualitative Aspect: a property P has some qualitative aspects if and only if the possession of P qualitatively contributes to the make-up of every bearer of P.

Then I proposed to define a powerful quality of aspects:

Powerful Quality: a property P is a powerful quality if and only if (1) P has some dispositional aspects and (2) P has some qualitative aspects.

In the same chapter, I argued that it is possible to renounce *Identity_o* while holding the other claims of the Identity Theory, namely *Powerful Qualities View*, *Partial Consideration*, and *Inseparability*. This is because these claims and *super* are independent. By abandoning

²³ Recall that powerful qualities can have more than one dispositional aspect and one qualitative aspects. The identity claim concerns every dispositional and qualitative aspects of a property.

Identity_o, the Dual-Aspect Account escapes the contradiction objection. Therefore, it satisfies the requirement of internal coherence.

Powerful Qualities View: all fundamental properties are essentially dispositional-and-qualitative, or powerful qualities.

Partial Consideration: every sparse property can be considered as dispositional or qualitative.

Inseparability: the dispositionality and qualitativity of every sparse property cannot be separated in reality.

In Chapter 4, I elaborated further the Dual-Aspect Account. There I defended it from an objection raised by Heil against the very notion of aspects (Heil 2003, 118–120). Then I distinguished it from other aspect views in the literature, such as that of Kristina Engelhard's (2010) and Henry Taylor's (2018).

In this Chapter I showed the Dual-Aspect Account fares well with the applicability requirement by offering us a serviceable machinery for analysing resemblances among properties. In particular, I explained how the proposed analysis of resemblance is preferable to one offered by the Identity Theory and Armstrong's theory of partial identity.

Now it remains to discuss the Dual-Aspect Account's "big picture" world-view that emerges by adopting it. This will be the topic of the next chapter. There I will finally discuss some arguments in favour of the thesis that all fundamental properties are essentially powerful qualities.

CHAPTER 6

“BIG PICTURES”

The physical world is only known as regards certain abstract features of its space-time structure—features which, because of their abstractness, do not suffice to show whether the physical world is, or is not, different in intrinsic character from the world of the mind. (Russell 1948, 240)

Metaphysics is an ambitious subject; it aspires, among other things, to given an account of the fundamental constituents of any reality and exposition of how these constituents mesh together to give the reality in question. (Campbell 1990, 1)

6.1 Preliminary Remarks

The ontology of powerful qualities offers a superior account of the fundamental properties of our world as compared to its main rivals: Dispositionalism and Categoricalism. I devoted the previous chapters to describe the conception of powerful qualities. Now I will discuss some arguments in favour of the thesis that all fundamental properties are powerful qualities.

As John Heil noted, we can informally measure the success of an ontology by considering three respects: (i) its internal coherence; (ii) the plausibility of its resulting “big picture” world-view; and (iii) its applicability to some philosophical puzzles (2012, 288). In Chapters 3 and 4 I showed how the Dual-Aspect Account meets (i). By avoiding the identity claim between a property’s dispositionality and its qualitativity, the Dual-Aspect Account escapes the charge of contradiction that jeopardises the Identity Theory. In this chapter, I will show how the Dual-Aspect Account may fare well with respect to (ii) and (iii). In order to do so, I will focus on a case which allows us to consider (ii) and (iii) together: consciousness and its place in nature.

The identity theorist contends that consciousness is one of the philosophical puzzles that the powerful qualities view may illuminate (for some examples, see Heil 2003; Taylor 2013; Carruth 2016). The Dual-Aspect Account offered in Chapter 3 can claim the same benefits since it is a version of the powerful qualities view. The reason for examining the case of consciousness is merely practical. The claim here is not that the Dual-Aspect Account ought to be endorsed just in case it fares well with (ii) and (iii) with respect to this case.

It is a manifest fact of our world that some things are conscious while others are not. Mary the neuroscientist, Luna the cat, and Fido the dog are examples of conscious beings.

The chair where I am sitting and the desk in front of me are examples of non-conscious beings. No exhaustive ontology of fundamental properties can ignore this fact: fundamental properties are those that “characterize things completely and without redundancy” (Lewis 1986, 60), so we need to account for the existence of conscious beings and their properties. There are two main strategies to accomplish this aim: one is to hold that consciousness is, in some sense, fundamental; the other is to argue that consciousness depends on, in a sense yet to be specified, fundamental non-conscious entities. The first strategy escapes the difficulties of bridging the gap between the non-conscious and the conscious. The second avoids raising the sort of incredulous stares that tends to meet the first.

Powerful qualities theorists part ways with respect to these strategies. It is important to note that the Dual-Aspect Account entails neither of them. Those who adopt the first strategy embrace some form of Physicalism. As I shall understand it, this is the view that all fundamental properties are physical, or non-mental. For example, such a strategy is adopted by Heil (2012, 222–248). By contrast, those who favour the second strategy typically endorse a form of Panpsychism. As I understand it, this is the view that all fundamental properties have some mental features. This is the strategy that Galen Strawson adopts (2008b, 19–74).

The choice between Physicalism and Panpsychism rests on independent factors, which I will flag in due course. My claim is not that the Dual-Aspect Account gives us reasons for adjudicating between these views. Rather my claim is that the Dual-Aspect Account offers a promising ontology for articulating both a powerful qualities-based Physicalism and a powerful qualities-based Panpsychism. The reader who thinks that Panpsychism is false or implausible should not be alarmed: the Dual-Aspect Account does not force us to go down the panpsychist route. Nevertheless, I will offer some considerations in favour of what I will call respectively Powerful Qualities Panpsychism over to Powerful Qualities Physicalism in §6.3.3.

Here is the plan. In the remainder of this section I will lay out a few preliminary remarks about the purpose of this chapter. In §6.2 I will elucidate the notion of fundamentality in question (§6.2.1). Then I will discuss three arguments for the thesis that all fundamental properties are powerful qualities (§6.2.2). In §6.3 I will show how it is possible to give an account of phenomenal properties from the viewpoint of the powerful qualities view. Phenomenal properties are those whose possession has a distinctive “what it is like”-ness. A paradigmatic example is the property of being conscious: there is a distinctive qualitative character for someone to be conscious. Then I will outline a version of Powerful Qualities Physicalism (§6.3.2) and compare it with a form of Powerful Qualities

Panpsychism (§6.3.3). Here I will offer some considerations in favour of the latter. In the last section of this chapter, §6.4, I will review the main claims of this dissertation and point out further work that needs to be done in future investigations.

My aim in this chapter is to argue in favour of the plausibility of the Dual-Aspect Account's "big picture" world-view. Talk of big pictures is inevitably speculative. But this should not be regarded as a downside. To ascertain the plausibility of an ontological view, we need to zoom out, so to speak, and look at the bigger picture. However, it is important to bear in mind that standard criteria for deciding between competing theories apply: one theory is preferable to another one with respect to its internal coherence, explanatory power, and the trade-off between respective costs and benefits.

6.2 Powerful Qualities All The Way Down

6.2.1 *Conceptions of Fundamentality*

The powerful qualities theorist holds the thesis that all fundamental properties are essentially dispositional and qualitative, or powerful qualities. Before discussing a few arguments for the truth of this thesis, it is useful to clarify the notion of fundamentality in question. Note that my aim here is not to argue in favour of a particular conception. This task goes beyond the scope of this work and would require a separate investigation.

The powerful qualities theorist does not offer an explicit definition of the notion of fundamentality that they have in mind. Some remarks, however, suggest that they could endorse two different, although related views. For example, Heil says that "fundamental physics is in the business of telling us what substances and properties are" (Heil 2012, 25; cf. Heil 2003, 200). The influential work of David Lewis (1983, 1986a) has made popular the view that physics investigates, among other things, the so-called *natural* properties. For example, Lewis says:

Physics has its short list of 'fundamental physical properties': the charge and masses of particles, also their so-called 'spins' and 'colours' and 'flavours', and maybe few more that have yet to be discovered. [...] What physics has undertaken, whether or not ours is a world where the undertaking will succeed, is an inventory of the *sparse* properties of this-worldly things. (Lewis 1986a, 60)

It seems that the powerful qualities theorist may have two conceptions of fundamentality in mind. The first is a conception that links fundamental properties to the practice of physics. The second is a conception that links them with the notion of naturalness.

Lewis characterises natural properties in opposition to abundant ones. The latter, he says, “do nothing to capture the casual powers of things” and “do nothing to capture facts of resemblance” (Lewis 1983, 346). In contrast, natural properties are a privileged minority of abundant properties (for this reason, they are also called *sparse*), “whose sharing makes for resemblance, and the ones relevant to causal powers” (Lewis 1983, 347). Lewis offers similar remarks in a famous passage of *On the Plurality of Worlds*:

Sharing of them [natural properties] makes for qualitative similarity, they carve at the joints, they are intrinsic, they are highly specific, the sets of their instances are *ipso facto* not entirely miscellaneous, there are only just enough of them to characterise things completely and without redundancy. (Lewis 1986a, 60)

The interpretation of Heil’s conception of fundamentality in terms of naturalness demands caution. For example, he does not explicitly mention Lewis’s notion of naturalness. Nor does he seem to embrace Lewis’s view that naturalness comes in degree.

Probably it would be best to say that the distinction between natural properties and others admits of degree. Some few properties are perfectly natural. Others, even though they may be somewhat disjunctive or extrinsic, are at least somewhat natural in a derivative way, to the extent that they can be reached by not-too-complicated chains of definability from perfectly natural properties. (Lewis 1986a, 61).

A conception of fundamentality in terms of naturalness is not exempt from problems. Lewis’s idea of naturalness comprises a number of disparate notions: intrinsicity, specificity, qualitative similarity, and “*joint carving*”-ness. A satisfactory account of fundamentality in terms of naturalness demands a clarification of these notions. For the purposes of this chapter, we can avoid embarking in such a task. It suffices to sketch two possible interpretations that clarify the idea of naturalness.

According to one interpretation, some of the associated notions pick out the core idea of naturalness (e.g. Bennett 2017, 126). On a different interpretation, “natural” is a theoretical term; properties that play or realise the naturalness role has some of the previous features (cf. Dorr and Hawthorne 2013). If Heil’s notion of fundamentality is akin to Lewis’s

naturalness, to say that a powerful quality is fundamental is to say that it is a perfectly natural property.

Heil, however, also hints at a conception of fundamental entities as the “building blocks” of reality (Heil 2003, 174). It is difficult to spell out this metaphor in more precise terms. To use another metaphor, we can think of the building blocks of a possible world w as those entities that God would have to create in order to make w as is.

A possible way to elucidate a “building block” conception of fundamentality is to consider other remarks offered by Lewis. In his view, the fundamental entities are those that “suffice to characterise things completely and without redundancy” and “figure in a minimal basis on which all else supervenes” (Lewis 1986a, 60; 2009, 205). If we embrace such a characterisation, a powerful quality is fundamental if it belongs to a minimal basis. Also in this case, it is worth noting that such a conception of fundamentality is not exempt from objections (see, for example, Bennett 2017, 107–124). In spite of its popularity, the question of whether this conception gives us a satisfactory account of fundamentality remains (for an overview on fundamentality, see Tahko 2018).

If the previous interpretations are plausible, then there are two readings of the thesis that all fundamental properties are powerful qualities: one is that all perfectly natural properties are powerful qualities; the other is that all properties that belong to one of our world’s complete minimal bases are powerful qualities. These readings are clearly different. But it is not my aim to establish which one we should favour. The choice rests on what account of fundamentality is the most appropriate. In turn, this is a separate issue that cannot be explored here. To repeat, my aim is merely to clarify how “fundamental” can be understood in what follows, without being committed to offering the best explication for this notion.

6.2.2 *Fundamental Powerful Qualities*

Having clarified how it is possible to understand the notion of fundamentality, we can now focus on the thesis that all fundamental properties are essentially powerful qualities. We can construct two arguments for this thesis by adapting the Actuality Argument and Independence Argument against pure powers presented in Chapter 3 (§3.1.2) The adaptation of the former is more persuasive than the adaptation of the latter, but both are worthy of attention. Each of these arguments begins by supposing that all fundamental properties are powers and then shows that they are powerful qualities instead. As I will explain, however, it is possible to construct a similar argument by supposing that all properties are qualities.

The proposed conception of aspects (Chapter 3, §3.2) plays a decisive role in the soundness of these arguments. It is therefore useful to repeat its relevant qualifications.

On the conception I wish to defend, aspects are ways of being of properties. I take that the notion of an aspect is a basic one and cannot be explicated in more basic terms. One way to think of aspects is to regard them as ontologically lightweight higher-order properties. They are lightweight because aspects supervene on properties. By endorsing the standard view that what supervenes does not constitute a genuine addition to being, aspects are not ontological additions. Once we have a property, we get its aspects.

Here is the crucial qualification: on the proposed view, it is the nature of a property that determines the aspect it has. For example, it is the nature, or essence of charge that determines its having the aspects of disposing a bearer to produce an electromagnetic force and contributing to its make-up by conferring upon it a certain quantity of charge that can be measured in coulombs. To put it differently, charge has the aspect of disposing a bearer to produce an electromagnetic force and conferring upon it a certain quantity of charge in virtue of its nature. In Chapter 3 (§3.2) I argued that this qualification allows us to capture the systematic connection between a property and its aspects. As a consequence, a property has the same aspects in every possible world in which it has the same nature. Presumably, a property could not exist with a different nature. It is therefore reasonable to think that a property has the same aspects in all worlds where it exists.

Now let us consider the Actuality Argument for fundamental powerful qualities. In its simplest form, it can be reconstructed as follows:

- (1) Every fundamental property is a power.
- (2) Every power has the aspect of actuality.
- (3) The actuality of a power is a qualitative aspect.

Now recall that a power has essentially some dispositional aspects (Chapter 2, §2.2). By virtue of having a power, every bearer that possesses it has a particular dispositionality (Chapter 3, §3.2.2). To put it differently, every power has the dispositional aspect of conferring upon a bearer some dispositions. With this assumption, together with (1)-(3), we reach the intermediate conclusion:

- (4) Every fundamental property has dispositional and qualitative aspects.

Now we have to consider the definition of a powerful quality introduced in Chapter 3, §3.2:

Powerful Quality: a property P is a powerful quality if and only if (1) P has some dispositional aspects and (2) P has some qualitative aspects.

Consequently, if a fundamental property has dispositional and qualitative aspects, then it is a powerful quality. From (1)–(4), we reach the conclusion that:

(5) Every fundamental property is a powerful quality.

Since on the proposed view aspects are determined by the nature of properties, the conclusion (5) can be regarded as stating that all fundamental properties have essentially dispositional and qualitative aspects. This is the version of the powerful qualities view under scrutiny.

Now let us consider premise (1). The immediate question is whether it is plausible to suppose that all fundamental properties are powers. Recall that Dispositionalism is meant to offer an ontological ground to the properties posited by physical theory (Ellis 2001, 2002; Molnar 2003; Mumford 2006; Marmodoro 2017). Here I shall not repeat the considerations in favour of this view (see Chapter 2, §2.2.1). It suffices to note that Dispositionalism fits nicely with a conception of fundamental properties as perfectly natural properties. As previously suggested, this conception may be endorsed by the powerful qualities theorist (§6.2.1). Therefore, the supposition that all fundamental properties are powers is in the spirit of the powerful qualities view.

Premise (2) captures the feature of *Actuality* of powers (Chapter 2, §2.2). The power theorist believes that powers are actual or occurrent features of their bearers. As George Molnar puts it: “having a power is *prima facie* having an actual property in the same sense in which objects have actual properties that are not powers” (2003, 99). This holds for fundamental properties as well. For example, if charge, mass and spin, are fundamental powers, then they are actual properties of their bearers. To say that a power has the aspect of being actual means that being actual is a way of being of that power. To put it differently, every power possessed by a bearer has the ontologically lightweight higher-order property of being actual (for the sake of brevity, I shall not repeat the characterisation of aspects. See Chapter 3, §3.2 for a detailed discussion). It is important to distinguish the claim that the actuality of powers is one of their aspects from the claim that every power is actual. Neither the dispositionalist nor the powerful qualities theorist is committed to the latter. The claim that every power is actual seems to imply the view that every power is *actualised* in the sense

of being instantiated. But this is an independent view: the claim that powers are actual properties of their bearers does not entail that every power is actual. The latter is a substantive view that hangs on separate commitments that are not in question here.

To clarify premise (3), we must consider dispositional and qualitative aspects. These notions are meant to capture the idea that “in virtue of possessing a property, an object possesses both a particular dispositionality and a particular qualitative character” (Martin and Heil 1999, 45–46). I proposed to regiment the possession of properties and their dispositional and qualitative aspects as follows.

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

Qualitative Aspect: a property P has some qualitative aspects if and only if the possession of P qualitatively contributes to the make-up of every bearer of P.

There are some good reasons for thinking of a power’s actuality as a qualitative aspect. The mark of dispositionality is the directedness toward a characteristic manifestation. But a power’s actuality lacks any characteristic manifestations. In general, there is no distinctive circumstance in which the actuality of a thing is manifested in a characteristic fashion. Rather being actual is best thought of as a way something is occurrently. Therefore, we should consider being actual as neither a dispositional property nor a dispositional aspect of a property. Relatedly, it is odd to say that the actuality of a property empowers a bearer. Rather it is a property’s dispositional aspect that empowers, so to speak, a bearer. For example, consider an electron. Being negatively charged is an actual property of the electron. But it is odd to say that the actuality of negative charge empowers the electron with the disposition to produce an electromagnetic force. It seems more appropriate to say that it is the dispositional aspect of negative charge that empowers the electron in such a distinctive way. Yet the possession of negative charge as an actual property does contribute to the make-up of the electron. For example, by having the actual property of being negatively charged, the electron has a certain quantity of charge that can be measured in coulombs.

From (1)–(3), we reach the intermediate conclusion (4), namely that every fundamental property has dispositional and qualitative aspects. For example, negative charge qualitatively *and* dispositionally contributes to the make-up of an electron. The next step is to consider the notion of a powerful quality. In Chapter 3 (§3.2) I proposed that a property is a powerful quality if and only if it has some qualitative and dispositional aspects. Thus we

reach the conclusion (5): every fundamental property is a powerful quality. In a nutshell, the strategy is to suppose that all fundamental properties are powers and show that they turn out to be powerful qualities because of their actuality.

I will now defend the Actuality Argument for fundamental powerful qualities from some objections. A first objection targets premise (1): one might protest that this version of the Actuality Argument relies on the implausible supposition that all fundamental properties are powers. Presumably, the opponent would raise some of the standard objections against this view (Chapter 2, §2.2.3).

To defend the plausibility of (1), we can point out that the standard objections against power views can be successfully resisted (Chapter 2, §2.2.3). Consider, for example, the family of regress objections. As David Armstrong puts it: “given purely dispositionalists account of properties, particulars would seem to be always re-packing their bags as they change properties, yet never taking a journey from potency to act” (1997, 80). The complaint is that if powers are *nothing but* mere potentialities, they are never actualised; powers are just passed around, from a potentiality to another, but never “take a journey” from potentiality and actuality. But the “always packing, never travelling” objection (Molnar 2003, 173) fails because it neglects that powers are indeed actual properties of their bearers.

There is another way to challenge premise (1): one might argue that only *some* fundamental properties are powers. Accordingly, only *some* fundamental properties will turn out to be powerful qualities. In the literature, such an objection relies on considerations about properties that do not appear to be dispositional in nature and yet play a crucial role in scientific theorising. Consider, for example, the following passages from Brian Ellis:

A property can have a causal role without either being a causal power, or being ultimately reducible to causal powers. For even the most fundamental causal powers in nature have dimensions. They may be located or distributed in space and time, be one or many in number, be scalar, vector or tensor, alternate, propagate with the speed of light, radiate with their effects uniformly, and so on. But these dimensions of the powers are not themselves causal powers. A location in space and time is not itself located in space and time. Nor does having a magnitude have a magnitude. Nor being one or many in number itself or many in number. Yet these dimensions of the powers clearly do have causal roles. They not only signify the respect in which causal powers may be similar or different with one another, their detailed specification is required to define the laws of distribution, action and effect of the powers. These dimensions of the powers are the properties that I call categorical. [...] They [the categorical

dimensions] are indeed amongst the essential properties of the causal powers. (Ellis 2012, 17–18)

Ellis's *dimensions* of powers can be regarded as qualitative aspects; namely qualitative ways powers are. Accordingly, location and quantitative properties are qualitative aspects of powers. This seems quite right (at least to me). Having a certain location or being scalar, for instance, do not appear to bestow upon a bearer any distinctive disposition. This is the power's job, as it were. Yet it does not seem quite right to claim that categorical dimensions, or qualitative aspects, are more fundamental than powers as Ellis does:

[Categorical properties] must be ontologically more fundamental than the causal powers. For without them, the causal powers could have no instances, and so could not have existence. Moreover, the instances of the causal powers normally have magnitudes and directions, and usually they are capable of acting together to produce effects that none could produce alone. But without the categorical properties to locate, identity and orient them in space or time, there could be no laws of directionality, distribution, of combination of the causal powers. They would be nowhere, nowhen, directionless and lacking identity. (Ellis 2012, 18)

If the categorical dimensions that Ellis invokes can be regarded as qualitative aspects of powers, then they depend on powers. This is because, on the proposed conception, aspects ontologically depend on the properties of which they are aspects of (Chapter 3, §3.2). Consequently, the categorical dimensions of powers would be less fundamental than powers. This is to say that once we have a power, we get its categorical dimensions. But not the other way round. For example, having a certain charge has the feature of certain magnitude. In light of the proposed interpretation, we can say that having a certain magnitude is one of its qualitative aspects, or categorical dimension. However, having a certain charge is more fundamental than the aspect of having a certain magnitude because this aspect ontologically depends on the property of having a certain charge. Note that this is not to say that the property of having a certain magnitude cannot be fundamental. Rather it is to say that if properties such as that of having a certain magnitude are categorical dimensions of powers, and if categorical dimensions are plausibly thought of as qualitative aspects, then they are less fundamental than the powers of which they are aspects.

We can also resist the claim that spatio-temporal or positional properties are more fundamental than powers. Examples of spatio-temporal and positional properties are being

spatio-temporally located at a certain space-time point, being oriented toward a certain direction, being at a certain distance from a certain point, and so on. The view that positional properties are more fundamental than instances of powers rests on a *substantivalist* account of space-time. According to this view, space-time plays the role of a container in which things are placed and get their positional properties depending on their position within the container: once you remove an instance of power from a certain location L, L remains there.

In order to block the fundamentality of positional and spatio-temporal properties, we can adopt a different view of space-time. On a *relationalist* account, for example, positional properties depend on the existence of objects and relations among them. On this view, the positional properties of powers depend on powers themselves. As such, positional properties would be less fundamental than powers. This strategy allows us to accommodate the existence of positional properties without undermining premise (1).

Another way of resisting the objection from fundamental positional properties is to adopt a background-free physics (Bird 2007a, 164–166; 2017; 137–138; e.g. Smolin 1991; Rovelli 1997). According to these views, a good physical theory should either eliminate space-time or cease to take it as categorically inert. This is to say that the mathematical model that describes space-time should be understood as *dynamical* rather than *fixed*. Namely, it should be affected by the state of the physical system in question. Either way, this approach removes the problem: positional properties are not fundamental or if they are, they are dispositional.

Against premise (2), someone might deny that the actuality of powers is one of their aspects. This option is the most dubious for it clashes with the very conception of powers. Every power theorist holds that powers are actual properties, irrespective of whether these are thought of as tropes or universals. Being actual is a way powers are (Chapter 2, §2.2). It is worth noting that premise (2) does not rule out the possibility of unactualised powers. But this version of the Actuality Argument must be understood as restricted to those powers that are indeed possessed by some bearers.

A more promising way to resist the Actuality Argument is to challenge premise (3), the idea that actuality is a qualitative aspect of powers. One might argue, by contrast, that actuality is a dispositional aspect or, alternatively, that actuality is neither a dispositional aspect nor a qualitative one. The first strategy requires us to show that the actuality of a power empowers every bearer of that power. Such an option may appear attractive, but it faces some worrisome consequences. To illustrate them, it is useful to focus on a particular example.

Let us suppose that the actuality of charge is a dispositional aspect of charge. Accordingly, let us imagine that a charged particle has the power to generate an electromagnetic force *and* an additional power in virtue of its actuality. This is because if the actuality of a power is a dispositional aspect of charge, then it empowers a bearer in some characteristic fashion. The problem is that it is unclear what this additional power may be. Perhaps it is the power to produce a sensory stimulation when a charged particle is observed in certain circumstances (i.e. the power to be observable in certain circumstances). Perhaps it is the power to be measurable under certain conditions. Perhaps it is the power to do something else altogether. Whatever this power might be, two worries arise.

First, it is unclear whether a power of this sort is a genuine dispositional aspect of charge in the sense of being determined by charge's nature. It seems that the actuality of every property could be understood as the dispositional aspect in virtue of which a bearer of that property can be observed in some circumstances. Actual massive particles, fragile vases, and black cats have all the power to be observable in some conditions. It seems odd that it is part of the nature of all these different properties (mass, fragility, and blackness) to empower their bearers in such a similar way.²⁴

Second, if a power's nature is determined by what that power does, then the actuality of a power would partially determine its nature. Canonically, a power's nature is determined by what that power is for. However, the nature, or essence of a thing has little to do with its actuality. Someone who defends this strategy faces the challenging task of clarifying how the essence of a property can be partially determined by its actuality. In light of such a difficulty, the strategy of regarding the actuality of a power as a dispositional aspect is less attractive than one might initially suppose. However, I acknowledge that the previous challenge can be met in some ways. For instance, someone who follows existentialist philosophers such as Heidegger and Sartre may argue that actuality of a thing is prior to its essence. It is unclear whether such a strategy can be applied to entities such as properties. But I grant that this may be an option to defend the claim that the actuality of a power determines in fact its essence.

Now let us consider the second strategy against (3), namely arguing that the aspect of actuality is neither dispositional nor qualitative. Someone might argue that "being actual" is a mere indexical locution (cf. Lewis 1973, 85–86), which distinguishes certain powers from others. For example, "being actual" can be plausibly understood as a predicate for

²⁴ The view is less odd, if one takes all sparse properties to be identical with some fundamental properties and maintain that every fundamental property confers upon the bearer the power to be observable in some conditions.

distinguishing between instantiated and non-instantiated powers in our world. Fortunately, an advocate of the Actuality Argument can resist this proposal. For example, she can object that there is a qualitative difference between an actual power and its non-actual duplicate. Consider for example the actual power to shatter and compare it with its non-actual duplicate. The advocate of the Actuality Argument might argue that being actual is a matter of how the actual power to shatter is like. This would suggest that the actuality of the actual power to shatter is one of its aspects. By contrast, the non-actual power to shatter lacks this aspect: being actual is not a way the non-actual power to shatter is (granted that there is a sense in which the non-actual power to shatter can *be* in some ways in the first place). Here I acknowledge that opinions about the force of the previous consideration diverge. This is related to a more general problem: in the literature, there is no consensus on how to understand the notion of actuality. For present purposes, it is sufficient to note that the previous considerations allow us to resist the objection that the aspect of actuality is neither dispositional nor qualitative.

Overall, the objections against premises (1)-(3) can be successfully resisted. This version of the Actuality Argument is a promising way to establish the thesis that all fundamental properties are powerful qualities.

Now let us turn to the Independence Argument (Chapter 3, §3.2.1). Like the Actuality Argument, it can be adapted for establishing the conclusion that all fundamental properties are powerful qualities. This argument focuses on the feature of Independence, which captures the idea that powers are ontologically independent from the occurrence of their manifestation (Molnar 2003, 82–83). In its simplest form, this version of the Independence Argument can be reconstructed as follows.

- (1) Every fundamental property is a power.
- (2) Every power is ontologically independent from the occurrence of its manifestation.
- (3) The ontological independence of a power from the occurrence of its manifestation is a qualitative aspect.

Thus from (1)-(3), we reach the intermediate conclusion:

- (4) Every fundamental property has a qualitative aspect.

Now if we consider that powers have dispositional aspects, and if we appeal the definition of a powerful quality, we reach the conclusion (6):

Powerful Quality: a property P is a powerful quality if and only if (i) P has some dispositional aspects and (ii) P has some qualitative aspects.

(6) Every fundamental property is a powerful quality.

Recall that aspects, on the proposed view, are determined by the nature, or essence of properties (see Chapter 3, §3.2). Thus the conclusion (6) can be regarded as stating that all fundamental properties have essentially dispositional and qualitative aspects. Now let us consider the premises of the Independence Argument.

Premise (1) express the supposition that all fundamental properties are powers. I will not rehearse the motivations in favour of the plausibility of (1). Premise (2) expresses the feature of *Independence*. For example, the power to generate an electromagnetic force can exist independently from its manifestation. Premise (3) expresses the idea that the ontological independence of a power from its manifestation in a qualitative aspect. This premise needs to be motivated.

The underlying idea traces back to C. B. Martin, who suggests that an unmanifested power exists as a “disposition base” (1993, 518). Elsewhere, Martin says that the disposition-base is actual “readiness” or directedness toward some manifestation; when a power is not manifested, it waits “ready to go” (2008, 29; 55). It is plausible to think of the readiness of a power as a qualitative aspect: being ready to manifest a power is a qualitative way a bearer of that power is like. In contrast, it does not seem quite right to say that existing a disposition-base is a dispositional aspect of a power. The unmanifested existence of a power does not dispose a bearer of that powers to do anything in particular.

From (1)-(3) we reach the intermediate conclusion (4): all fundamental powers have dispositional and qualitative aspects. Then we can consider the definition of a powerful quality and reach the conclusion (6): all fundamental properties are powerful qualities.

I will now discuss some possible objections against premises (2) and (3) of this version of the Independence Argument (objections against premise (1) can be resisted in the same way as for the Actuality Argument for fundamental powerful qualities). Against premise (2), one might argue that fundamental powers lack of the feature of *Independence*. For example, Anna Marmodoro claims that:

Fundamental powers of elementary particles are continuously manifesting in their environment, given the presence of the ambient gravitational force in the universe, but also of the other fundamental forces. In complex objects, powers are continuously manifesting in the presence of other powers in the same object. (Marmodoro 2017, 62)

For all we know, it is possible that fundamental powers are constantly manifesting. However, Marmodoro's claim does not threaten premise (2). Fundamental powers may constantly be manifesting while being ontologically independent from their manifestations. It is in fact possible that a change in the circumstances would affect the manifestation of fundamental powers but not their existence: were the conditions for the constant manifestation to disappear, fundamental powers would still exist. So even if Marmodoro is right, premise (2) can be true. In order to reject premise (2), one has to argue that powers *cannot* exist independently from the occurrence of their manifestations. But this would clash with the manifest fact that not all powers are constantly manifested. As such, this strategy is seemingly a non-starter.

Alternatively, one might argue against premise (3), namely that *Independence* is a qualitative aspect of powers. Here there are two available options. The first is to argue that *Independence* is neither qualitative nor dispositional. However, this strategy leaves unclear what kind of aspect *Independence* is. The second is to argue that *Independence* is a dispositional aspect. If *Independence* were a dispositional aspect of a power, then there would be another power possessed by every bearer of that power. Despite the initial plausibility, this strategy gives rise to some worrisome consequences. First, it is hard to imagine what power a bearer gets in virtue of some of its other powers existing unmanifested. Second, if *Independence* is a dispositional aspect, then it would partially determine the essence, or nature, of the power of which it is an aspect of. For example, on this view, the essence of charge is determined by the power to exert an electromagnetic force *and* another power that obtains in virtue of its *Independence*. This sounds implausible as it is unclear, once again, what this other power might be. The previous difficulties make this strategy unattractive. We are in a better position by accepting that *Independence* is a qualitative aspect of powers.

Overall, it is possible to defend the Actuality Argument and Independence Argument for fundamental powerful qualities from the objections considered. Therefore, these arguments represent a promising way to establish that all fundamental properties are powerful qualities.

The previous arguments begin by supposing that all fundamental properties are powers and then show that they are powerful qualities. One might wonder whether it is possible to construct a similar argument by supposing that all fundamental properties are qualities and, if so, what reasons we have for preferring one argument instead of the other. As it turns out, it seems so. Call this the “Knowability Argument” for fundamental powerful qualities. To construct the Knowability Argument, we need to recall the notion of a qualitative property.

According to Categoricalism, all fundamental properties are qualitative. All there is to a qualitative property is “its identity with itself and its distinctness from other qualities”. Another basic feature of fundamental qualities is that they are “intrinsically inert and self-contained” (Black 2000, 91); they do not point “beyond themselves to further effects brought about in virtue of such properties (Armstrong 1997, 80).

It is sometimes argued that the previous characterisation makes qualities unknowable. Against this objection, Ellis (2012) claims that qualities are in fact knowable. In his view, Categoricalism only implies that fundamental qualities “cannot be known without the mediation of the causal powers that are located with them” (Ellis 2012, 21). The underlying idea is that qualities are knowable via their associated powers. Consider the shape of an object, for example. In Ellis’s view, the shape of such an object is a quality. Yet if the object is illuminated, it reflects light in certain ways. This gives us a way to know the object’s shape. In light of these remarks, we can assemble the Knowability Argument. In its simplest form can be presented as follows.

- (1) Every fundamental property is a quality.
- (2) Every quality is knowable.
- (3) Being knowable is a dispositional aspect of a quality.

Now we have to recall that qualities have essentially qualitative aspects (Chapter 2, §2.3). Namely, the possession of a quality essentially contributes to the make-up of its bearer. This is a qualitative aspect of a quality. Thus from (1)-(3), we reach the intermediate conclusion:

- (4) Every fundamental property has dispositional and qualitative aspects.

By considering the definition of a powerful quality, we reach the conclusion (5):

Powerful Quality: a property P is a powerful quality if and only if (i) P has some dispositional aspects and (ii) P has some qualitative aspects.

(5) Every fundamental property is a powerful quality.

Since on the proposed conception aspects are determined by the nature of properties, the conclusion (5) expresses the powerful qualities view. Let us now consider the premises of this argument in turn (see Chapter 3, §3.2).

Premise (1) is the supposition that all fundamental properties are qualities. Premise (2) is the claim that qualities can be known through their associated powers. Premise (3) demands some defence, but it seems at least plausible to think of the knowability of a property as one of its dispositional aspects. From (1)–(3), we reach the intermediate conclusion (4). Once we recall the definition of a powerful quality, we reach the conclusion (5).

The Knowability Argument is a viable option for defending the thesis that all fundamental properties are powerful qualities. However, for reasons that will become clear in due course, it is less attractive than the Actuality Argument or the Independence Argument. But first, let me defend the initial plausibility of premise (3), the idea that the knowability is a dispositional aspect of qualities.

We could say that the knowability of a quality gives it the power to be known in some circumstances. Albeit contentious, such a dispositional understanding of knowability fits smoothly with Ellis's remarks. Think of a marble. On the proposed view, the sphericity of the marble can be known in some circumstances. For example, if light reflects on the marble, then we can know its shape. Consider a putative fundamental quality such as charge. If charge is knowable, then there is some circumstance that allow us to know charge. At first impression, this seems quite right: for instance, measuring devices give us an indirect way to know the charge of entities such as particles. More needs to be said about the knowability of qualities. But the previous consideration suffices for defending the initial plausibility of premise (3).

Of course, one can argue against (3), namely by denying that the knowability of a quality is a dispositional aspect. For example, someone could argue that this aspect is intuitively an extrinsic one. So it does not appear to fit either the category of categorical or dispositional aspects. However, the assessment of such a strategy unnecessarily complicates the present discussion for we would need to clarify what is for a thing to be knowable.

Fortunately, we can avoid this challenge: the most significant worry related the Knowability Argument concerns premise (2).

Let us follow Lewis (2009) and his plea for humility: suppose that to know a quality is to know that what role that quality plays in a scientific theory or daily life, and that this suffices for knowing what a quality is (Lewis 2009, 215). To know the quality of charge, on this view, is to know that charge is the property that plays the role of disposing bearers to generate an electromagnetic force, for instance.

Lewisian humility is a plausible view of the knowability of qualities. However, it leaves open the possibility that there are unknowable qualities, even as role-occupants. Suppose that some qualities are completely inert properties (cf. Lewis's (2009) notion of *idler* properties). Perhaps they are undetectable epiphenomenal properties of some sort. These completely inert qualities would play no role either in scientific theory or daily life. If this is a genuine possibility, then premise (2) is false: there can be some unknowable fundamental qualities.

One way to resist the argument is to deny that the possibility of completely inert qualities. An advocate of this strategy could argue that there might be unknowable qualities in the sense that we do not have access to them. Yet there is no reason to believe in the existence of completely inert qualities. To posit them would offend against ontological parsimony. This may be a good reason for resisting the acceptance of completely inert qualities, but it does not rule out their possibility. In light of these considerations, we should be cautious with respect to the truth of premise (2).

A proponent of the Knowability Argument could attempt to downscale the previous worry by restricting the attention to fundamental properties. She might concede the possibility of completely inert qualities, but deny that these are fundamental. One way to do so is to replace (2) with (2*): Every fundamental quality is knowable. The amendment may look promising.

A question remains, however: is being knowable *really* a dispositional aspect? As anticipated, someone might argue that being knowable does not seem to fit either the category of categorical or dispositional aspects. Someone else may argue that it does not seem that knowability of a property contributes to the make-up of a bearer of that property. Others might protest that the knowability of a property does not appear to be one of its intrinsic features. Rather it seems to depend on the existence of the property *and* cognizers such as humans, who are capable of knowledge. If no cognizer had been around, talk of the knowability of properties would make no sense. Of course, this is a substantive claim that needs to be supported with some arguments. I shall not attempt to do so here for it would

divert from the purposes of the chapter. It is worth noting, however, that this objection is a serious threat to the Knowability Argument.

It seems to me, however, that even if we concede the being knowable is a dispositional aspect, the Knowability Argument would still face the previous problem: it is possible that there are fundamental and yet completely inert (and therefore unknowable) properties. So there are good reasons for being wary of the truth of (2) as well as (2*).

Lewisian humility does not rule out the possibility that some fundamental qualities are in fact unknowable. The moral is that Knowability Argument is a viable option for establishing that all fundamental are powerful qualities, but this argument appears to be unsound. Yet there might be other more promising arguments for fundamental powerful qualities that assume Categoricalism. Thus there is still hope for someone who spurns the assumption that all fundamental properties are powers.

6.3 Consciousness and Powerful Qualities

6.3.1 “*What it is like*”-ness

It is a manifest fact of our world that some entities are conscious. The attentive reader of these lines is conscious and so am I who is writing them. Plausibly, also Fido the dog and Luna the cat are conscious—though in a different way as compared to humans. Any ontology that aims to account for everything that exists has to accommodate this fact. As I shall understand it, this is the problem of accommodating consciousness in the physical world.

As is customary, let us distinguish between “easy problems” and “the hard problem” of consciousness (Chalmers 1995). The easy problems concern the task of specifying the details of the various cognitive mechanisms and functions associated with conscious states such as memory and attention. The hard problem of consciousness is the problem of accommodating the phenomenal character, or “what it is like”-ness of conscious experience in the physical world. There something it is like to feel a sharp pain in your hand, to experience stifling anxiety, and to think of a beloved one. Each of these experiences has a distinctive phenomenal character. To put it differently, there is something it is like to have them.

Call *phenomenal consciousness* the awareness of the “what it is like”-ness of experience (Block 1995). The hard problem of consciousness is *hard* because it is unclear how to accommodate the existence of phenomenal consciousness in the physical world.

We can reformulate the hard problem of consciousness in terms of properties. Let us assume that a property is phenomenal just in case there is something to possess it (cf.

Chalmers 2010, 106). Let us also assume that conscious experiences are those that involve the instantiation of phenomenal properties. In a slightly more precise way, we can relate the possession of a phenomenal property and its “what is it like”-ness as follows.

Phenomenal Property: P is a phenomenal property if and only if there is something it is like to have P.

It can be argued that the proposed definition is not particularly illuminating. However, it avoids any substantial commitments on the nature of phenomenal properties and their bearers. Of course, a complete account of phenomenal properties requires us to specify these details. But for present purposes, we can hold this level of generality. An example will illustrate the definition. Imagine that Mary sees a red rose. During such an experience, she instantiates the property of seeing a red rose. Plausibly, there is something it is like to see a red rose for Mary. This, according to the proposed definition, makes the property of seeing a red rose a phenomenal one.

Having introduced the notion of a phenomenal property, we can now regard the hard problem of consciousness as the problem of accommodating phenomenal properties in the physical world. There are two main strategies to address this problem (provided that we acknowledge that this is indeed a problem and that we should attempt to solve it): the first is to take phenomenal properties to be fundamental, the second is to show that the existence of phenomenal properties can be accounted in terms of fundamental non-phenomenal properties such as physical ones.

A view of in the spirit of the first strategy has been put forward by Bertrand Russell (1927). He argues that physics characterises fundamental entities and properties in dispositional terms. The charge of a particle, for example, is described as its disposition to exert a force when it interacts with other particles. In same vein, inertial mass is described as the disposition to resist acceleration of a physical entity. These descriptions leave open the possibility that fundamental physical properties may have some non-dispositional features. Among these, there may be features of phenomenal properties. Chalmers labels views in the vicinity of Russell’s one “type-F Monism” (2010, 133) (some advocates of type-F views are Chalmers 1996; Strawson 2008b, 19–74; Feigl 1958; and Coleman 2015).

The second strategy is perhaps the most popular one. There are a number of ways in which it is possible to spell out the relation between non-fundamental phenomenal and fundamental non-phenomenal properties (see Chalmers 2010, Ch. 6 for an overview). As I pointed out at the beginning of this chapter (§6.1), the Dual-Aspect Account does not force

to embrace a particular one. However, in §6.3.3, I will offer some considerations in favour of the first. In that section, I will argue that the first strategy escapes the difficulty of bridging the gap between the non-phenomenal and the phenomenal. This is a significant merit for it is unclear whether this gap can be bridged in the first place. But the reader who regards the view that phenomenal properties are fundamental as implausible should not be alarmed: the ontology of powerful qualities does not entail that there are fundamental phenomenal properties.

In this section, my aim is to show that a conception of powerful qualities is well-suited to articulating a type-F view. In particular, I will argue that the Dual-Aspect Account (Chapter 4) offers a fruitful framework for the friend of type-F monism. In the literature, there are several examples of how the ontology of powerful qualities may elucidate certain questions concerning the philosophy of mind. For example, Jonathan Jacobs (2011) and Dave Robb (2017) argue that a conception of powerful qualities allows us to elucidate the notion of a mental property and its features. John Heil (2003; 2012) and Henry Taylor (2013) invoke the powerful qualities view to defend a certain version of Physicalism. Alexander Carruth (2016) discusses the implications of the Identity Theory with respect to the possibility of (philosophical) zombies. Strawson (2008b) advocates a version of type-F monism, but he does not explicitly link it with his commitment to the Identity Theory (2008a). By discussing how the Dual-Aspect Account can be incorporated into a type-F monist view, I will attempt to fill the gap left by Strawson (and other powerful qualities theorists who endorse a type-F view). To highlight the merits and demerits of a powerful qualities-based type-F view, I will present firstly a powerful qualities-based version of Physicalism (for short, *Powerful Qualities Physicalism*).

6.3.2 *Powerful Qualities Physicalism*

Under the banner of Physicalism, there is a family of diverse views which share the idea that the physical grounds, in some sense, the mental (Dasgupta 2014). The difference between these views lies in how they spell out the relation between the physical and the mental. The powerful qualities theorist who embraces Physicalism endorses a particular view, which goes under the name of the Mind-Brain Identity Theory (Place 1956; Smart 1959; Armstrong 1968; Lewis 1994; Heil 2003). On the Mind-Brain Identity Theory, every phenomenal property is strictly identical to some physical property or collection of physical properties. To use the previous example, Mary's phenomenal property of perceiving a red rose would be identical with some of her physical properties.

To avoid confusion with the Identity Theory of powerful qualities, I will use the term “Physicalism” to refer to the Mind-Brain Identity Theory. My purpose in this section is to illustrate how Powerful Qualities Physicalism looks like, and discuss its strength and weakness. However, I shall not discuss the question of whether Physicalism, in its powerful qualities-based version or other ones, is true.

A prominent advocate of Powerful Qualities Physicalism is Heil. For example, he says:

I prefer to think that the qualities of conscious experience are perfectly ordinary qualities of brains. By “perfectly ordinary” I mean that the qualities owe their existence to the properties of the components of brains and their arrangements. Experiential [phenomenal] qualities are not “higher-level” properties, nor are they, in the usual sense, ‘emergent’. Their status is no more remarkable than the status of the qualities like sphericity, liquidity, or warmth. (Heil 2003, 235)

Your visual experience of a tomato is a mutual manifestation of dispositions present in structured light radiation and reciprocal dispositions in your visual system. [...] If your visual experiences have qualities, these qualities are present in your brain: they are qualities of neurological goings-on that constitute manifestations of dispositions that themselves constitute your visual system. (Heil 2003, 233)

Recall that “qualities”, on the Identity Theory, are *powerful* qualities. Thus the previous passages suggest that Heil holds the view that the phenomenal properties conscious experience are identical with the physical powerful qualities of brains. Unfortunately, the details of how the Identity Theory and Physicalism can fit together are missing. While I will attempt to fill this gap, certain issues will remain unaddressed: an elaboration and defence of Powerful Qualities Physicalism would be the subject of a different investigation.

A preliminary requirement for Powerful Qualities Physicalism is the adoption of a conception of phenomenal properties that leaves open the possibility that they can be physical. Unsurprisingly, Physicalism (understood as the Mind-Brain Identity Theory) is hopeless if one defines a phenomenal property as non-physical. The proposed definition of *Phenomenal Property* meets such a requirement.

The next step is the hardest one: we have to establish that every phenomenal property is a powerful quality. This proposal has been made explicit by Henry Taylor, who claims that:

On the powerful qualities view, the qualitative/categorical and the dispositional are identical. So, a qualitative/categorical property just is a dispositional one, and vice versa. Applying this faithfully to the hypothetical position [i.e. the view phenomenal properties are physical], we can see that such a position would claim that phenomenal properties have ‘entirely’ physical natures. The phenomenal property itself is identical with a physical one, it is just that this property can be thought of under a phenomenal concept (such as ‘pain’), or a physical one (such as ‘nociceptors firing’). (Taylor 2013, 99)

More recently, Dave Robb has offered a similar proposal:

On the identity theory [of powerful qualities], any given quale [phenomenal property] will be some physical property that is unproblematically efficacious with respect to behaviour. (Robb 2017, 212)

Unfortunately, neither Taylor nor Robb offer an explicit argument for the identity between powerful qualities and phenomenal properties. To construct such an argument, let us assume, quite plausibly, that a phenomenal property is a powerful quality just in case it is dispositional and qualitative. Then we can argue that all powerful qualities are physical. So if phenomenal properties are powerful qualities, then they are physical. Call this the Identity Argument. In its simplest form, it can be reconstructed as follows.

- (1) A property is a powerful quality if and only if it is dispositional and qualitative.
- (2) Every phenomenal property is dispositional and qualitative.

From (1)–(2), we reach the intermediate conclusion:

- (3) Every phenomenal property is a powerful quality.

Then, a physicalist can invoke the premise that:

- (4) Every powerful quality is a physical property.

From (3) and (4), we get that:

(5) Every phenomenal property is a physical property.

Premise (1) expresses the conception of properties as powerful qualities. Premise (2) conveys the idea that phenomenal properties are dispositional and qualitative (Heil 2003, 232–235; Jacobs 2011; Taylor 2013; Robb 2017). Premise (4) captures the commitment to Physicalism. From these premises, the Identity Argument establishes that phenomenal properties are powerful qualities.

Crucial to the Identity Argument is premise (2). The task of showing its truth is particularly challenging and cannot be adequately addressed here. However, a few remarks in favour of the plausibility of (2) will suffice for the purpose of outlining Powerful Qualities Physicalism.

Phenomenal properties are paradigmatic examples of qualitative properties: to have them is a matter of how a conscious being is like. But this notion of qualitativity is too generic. Even the property of being charged is qualitative for it is a matter of how a particle, for example, is like. Arguably, we should preserve the idea that phenomenal properties are particular kinds of qualitative properties. For example, we should maintain a distinction between properties such as that of being in pain and being negatively charged. A straightforward strategy to accomplish this aim is to specify the qualitativity of phenomenal properties. By considering the definition of *Phenomenal Property*, someone could say that the qualitativity of phenomenal properties involves essentially the “what it is like”-ness of experience. Those who embrace the first option may claim that phenomenal properties are essentially associated with the “what it is like”-ness of experience, whereas other qualitative properties are not. Someone who embraces this approach can argue that being in pain is essentially associated with the “what it is like”-ness of pain experience, whereas there is no “what it is like”-ness associated with the property of being negatively charged.

Another option is to impose some restrictions on the kind of entities that can bear phenomenal properties. For example, someone can argue that an entity may instantiate phenomenal properties just in case it is a “subject of experience”, namely it is capable of entertaining conscious experiences (cf. Strawson 2008b, 152). On this strategy, one could argue that particles are not subjects of experience and therefore cannot instantiate phenomenal properties. Both strategies have costs and benefits that cannot be compared here. It suffices to note that the previous strategies offer a way to defend premise (2).

In absence of details, however, the truth of (2) relies on speculation. On closer inspection, it might be that the “what it is like”-ness of phenomenal properties cannot be

understood in terms of qualitativity. Such a possibility would undermine the viability of the Identity Argument.

Premise (2) also raises another class of worries that concern the dispositionality of phenomenal properties. We can plausibly regard the dispositionality of phenomenal properties as involving a conscious being's disposition to have access to certain information about her conscious states or to manifest certain behaviours (cf. Robb 2017, 212–213). For example, the dispositionality of the phenomenal property of being in pain might dispose someone to make certain verbal reports about the pain sensations. The potential objection here is that the dispositionality of phenomenal properties does not seem to be essential, whereas it is for powerful qualities. This is because powerful qualities are essentially dispositional and qualitative. Therefore, as the objection goes, we should not identify phenomenal properties with powerful qualities. For example, one could argue that in every possible world there is something it is like to be in pain. Yet, in some possible worlds, being in pain may dispose to exhibit an avoidance behaviour from the source, whereas it may dispose to do the opposite in others.

The previous worries do not undermine premise (2) conclusively. Therefore, there is no evident reason for thinking that (2) is false. We could tweak the notion of dispositionality to ensure that a phenomenal property has a certain qualitativity and a certain dispositionality in every possible world. It is up to the friend of Physicalism to carry the burden of defending this view. My point here is that the Identity Argument represents a strategy for establishing Powerful Qualities Physicalism.

The Dual-Aspect Account offers a way to improve the Identity Argument. By appealing to the notions of dispositional and qualitative aspects, we can specify further the conditions for a phenomenal property to be a powerful quality. From the viewpoint of the Dual-Aspect Account, a property is a powerful quality just in case it has some dispositional and qualitative aspects:

Powerful Quality: a property P is a powerful quality if and only if (1) P has some dispositional aspects and (2) P has some qualitative aspects.

Recall that to say that a property has some dispositional and qualitative aspects means that a bearer of that property has certain powers by virtue of it, and it qualitatively contributes to its make-up (cf. Martin and Heil 1999, 45–47).

Dispositional Aspect: a property P has some dispositional aspects if and only if there is a power or cluster of powers that is possessed by every bearer of P.

Qualitative Aspect: a property P has some qualitative aspect if and only if the possession of P qualitatively contributes to the make-up of every bearer that of P.

If we adopt the Dual-Aspect Account, then we can claim that a phenomenal property is a powerful quality just in case it has dispositional and qualitative aspects.

Unfortunately, the adoption of the Dual-Aspect Account does not remove the worries related to premise (2). On the Dual-Aspect Account, it is possible to hold that the “what it is like-ness” of phenomenal properties is a qualitative aspect, while a dispositional aspect could be, for example, the disposition to make certain verbal reports about our occurrent conscious experience. But the question of whether the “what it is like”-ness of phenomenal properties can be adequately understood in terms of qualitativity remains. Similarly, one can still argue that the disposition to make certain verbal reports about an occurrent experience (or to exhibit a certain behaviour) is not an essential dispositional aspect of phenomenal properties (the same objection can be raised against other putative dispositional aspects of phenomenal properties).

In spite of the previous difficulties, Powerful Qualities Physicalism is an attractive option for the friend of Physicalism (see Heil 2003; Taylor 2013; and Robb 2017 for other merits of this view). The conception of powerful qualities offers a promising framework for accommodating the qualitativity of phenomenal properties. Of course, this is not to say that the view is exempt from problems. In addition to the previous worries related to the Identity Argument, the standard arguments against Physicalism also apply to Powerful Qualities Physicalism.

It seems to me, however, that there is a different and more significant reason for favouring a different view. To illustrate it, let us focus again on fundamental properties. From the viewpoint of Powerful Qualities Physicalism, every phenomenal property is identical with some physical powerful quality. The version of powerful qualities view that I wish to defend here is a view of fundamental properties. On this version, Powerful Qualities Physicalism turns out to be the view that every phenomenal property is identical with some physical fundamental powerful quality. This raises some significant worries.

Canonically, the putative fundamental physical properties are *microphysical*. Jonathan Schaffer (2003, 499) suggests that this view traces back Isaac Newton, who

proposes that “the smallest particles of matter cohere” to “compose bigger particles” (1704, 394). Here are some other representative quotations that capture this view:

“Matter, so it seems, consists of just two types of elementary particles: quarks and leptons. These are the fundamental building blocks of the material world.” (Coughlan and Dodd 1991, ix)

The bottom level is usually thought to consist of elementary particles, or whatever our best physics is going to tell us are the basic bits of matter out of which. All material things are composed. As we go up the ladder, we successively encounter atoms, molecules, cells, larger living organisms, and so on. (Kim 1998, 15)

[Physicalism is] the doctrine that actually (but not necessarily) everything non-microphysical is composed out of microphysical entities and is governed by microphysical laws (Pettit 1994, 253)

Accordingly, for example, the phenomenal property of being in pain would be identical with some putative fundamental *microphysical* powerful qualities such as mass, charge and spin. If we embrace this view of fundamental properties and the version of powerful qualities that I wish to defend, a question arises: are microphysical properties phenomenal?

A negative answer requires the powerful qualities physicalist to account for the fact that not every entity has phenomenal properties. Here it is important to recall that I am considering Physicalism in its Mind-Brain Identity Theory version (Place 1956; Smart 1959; Armstrong 1968; Lewis 1994; Heil 2003). If Powerful Qualities Physicalism is true, it seems that the phenomenal property of being conscious is identical with some fundamental microphysical powerful qualities. Yet only Mary has the phenomenal property of being conscious, whereas electrons do not appear to have it. Physicalists (not only powerful qualities physicalists) differ on how to accommodate this fact. For example, one could deny that Physicalism amounts to micro-physicalism (Hüttemann and Papineau 2005), namely the view everything “non microphysical is composed out of microphysical entities and is governed by microphysical laws” (Pettit 1994, 253). Another strategy is to reformulate Physicalism in terms of supervenience rather than identity (cf. Wilson 2005). Here it is not possible to explore the various options on the table. It is sufficient to mention that the powerful qualities physicalist’s strategy is to invoke the notion of an arrangement. For example, Heil claims that:

Conscious systems might reasonably be thought to require particular sort of highly complex arrangements of the fundamental things. Consciousness is one of many kinds of state into which such systems are capable of entering. Their occupying a conscious state, their being conscious, is a matter, not of emergence, but of their constituents being organized as they are, including all their various interrelation with one another and with their extra-systemic environments. (Heil 2012, 240)

Dynamic arrangements of the fundamental things serve as truthmakers for *all* the truths that have truthmakers, including all the truths concerning conscious experience. If you organize *these* fundamental things in a particular way, the result will be an arrangement of which it is true that this is a tomato, this is red, this is spherical. If you take the very same fundamental things and organize them differently, you will produce an arrangement of which it is true that this is a sentient being undergoing a particular kind of experience. (Heil 2012, 247)

It is not my aim to defend the plausibility of this strategy. However, it is worth noting that the appeal to arrangements raises a number of challenging questions. To begin with, the resulting view may not be Physicalism anymore: the mental would not be strictly identical with the physical, but rather with arrangements of physical entities. Are these arrangements physical? If they are not, this strategy threatens the spirit of physicalism: we accommodate the mental in the physical world by burdening us with some other non-physical entities, namely arrangements. The task of showing that arrangements are indeed physical encumbers the powerful qualities physicalist who adopts this strategy.²⁵

A positive answer to the question of whether microphysical properties are phenomenal has an odd consequence: it seemingly requires us to accept, for example, that Mary and an electron have some phenomenal properties. This is anything but problematic in the case of Mary. There is something it is like for Mary to be conscious, feeling pain, and remembering a fond memory. In contrast, the possibility that there is something it is like for an electron to entertain certain conscious experiences raises incredulous stares. Panpsychists such as Strawson (2008b; 2016) embrace this consequence and claim that the resulting view

²⁵ I acknowledge that there are, in the logical space of possibilities, views of non-fundamental powerful qualities that may escape some of the worries that I discussed. However, it is worth recalling that the aim of this work is to answer the question of ‘what is the most adequate conception of fundamental properties to make sense of our world?’ For this reason, I restrict my attention a version of fundamental powerful qualities view.

is a promising theory of consciousness and its place in nature. As I will argue in the next section, Powerful Qualities Panpsychism appears to have some important advantages with respect to Powerful Qualities Physicalism.

6.3.3 *Powerful Qualities Panpsychism*

Etymology would suggest that Panpsychism is the doctrine that everything has a mind. However, its advocates are committed to the weaker thesis that “some microphysical entities are conscious” (Chalmers 2016a, 24). In same vein, Galen Strawson depicts it as the view that some fundamental microphysical entities are “intrinsically experiential, intrinsically experience-involving” (Strawson 2008b, 70). If Panpsychism is true, then quarks and photons are in some sense conscious. A distinctive feature of conscious experience is that there is something it is like to be conscious. The “what it is like”-ness of consciousness can be understood in terms of phenomenal properties. Therefore, we can think of Panpsychism as the view that some fundamental microphysical entities have phenomenal properties.

Panpsychism is often dismissed as a crazy view. It is therefore useful to spend a few words in favour of its plausibility. Let us follow Chalmers by distinguishing between *macroexperience* and *macrophenomenal properties*, and *microexperience* and *microphenomenal properties* (2016a, 24). Macroexperience is the kind of experience that non-fundamental macrophysical entities such as humans can enjoy. It involves macrophenomenal properties such as that of being in pain or having a pleasant sensation. Microexperience is thought of as the kind of experience that microphysical entities such as quarks and photons can enjoy. Supposedly, it involves microphenomenal properties: properties by virtue of which there is something it is like to have a microexperience (Chalmers 2016a, 24). Such a distinction allows us to refine Panpsychism as the view that some fundamental microphysical entities have microphenomenal properties.

It is worth noting, however, that even if quarks and photons entertain microexperiences, it does not follow that they instantiate microphenomenal properties. We do not know whether there is a distinctive phenomenology of microphenomenal entities. So it remains possible that quarks and photons may instantiate macrophenomenal properties such as that of being in pain like us. Consequently, the appeal to microphenomenal properties may not be the best way of formulating Panpsychism. But it seems very plausible, as David Chalmers puts it, that microexperience “is very different” and “almost certainly much simpler” than human experience (Chalmers 2016a, 25). Since my aim is to show how the Dual-Aspect Account can elucidate a version of Powerful Qualities Panpsychism, I will set

aside this worry. I leave the task of justifying the claim that microphysical entities instantiate microphenomenal entities to the friend of this view.

The panpsychist holds that her view is preferable to physicalist views of consciousness. Let us consider an argument provided by Galen Strawson (2008b; 2016). According to Strawson, any view that attempts to give an account of how the non-experiential, or non-phenomenal “gives rise” to the experiential faces an impossibility which is analogous to explaining how non-spatial features give rise to spatial ones (Strawson 2008b, 63–65). According to Strawson, a view that holds that it is in fact possible that non-spatial phenomena give rise to spatial ones “should be rejected as absurd” (Strawson 2008b, 63). According to Strawson, a view that holds that it is in fact possible that non-experiential phenomena give rise to experiential ones is “exactly on a par”, and therefore it should be rejected as absurd (*ibid.*).

Strawson concedes that there are cases in which a kind of phenomena can give rise to a different kind of phenomena. To use his example: “you can get liquidity from non-liquid molecules as easily as you can get a cricket team from eleven things that are not a cricket team” (Strawson 2008b, 63). But the case of experientiality is a special one: it is impossible, Strawson contends, that non-experiential features give rise to experiential ones.

The notion of “giving rise” that Strawson has in mind is a kind of emergence: if a phenomenon Y is emergent from a phenomenon X, then Y is wholly dependent on X to the effect that “all features of Y trace intelligibly back to X” (Strawson 2008a, 65). This is to say that “there must be something about X and X alone in virtue of which Y emerges, and which is sufficient for Y” (*ibid.*). Strawson argues that in the case of experientiality this criterion of intelligibility cannot be met. However, the appeal to the notion of emergence is somewhat misleading. His argument targets any view that attempts to bridge the mental/non-mental divide. So it does not target only emergentist views of consciousness (for an overview on the topic of emergence and the mind-body problem, see Alexander 1920; Broad 1925; Smart 1981; Van Cleve 1990; O’Connor 1994; McLaughlin 1997; Silberstein 1998; Kim 1999; Wilson 1999, 2015b; Van Gulick 2001; O’Connor and Wong 2005).

Strawson’s argument is contentious of course. The notion of “giving rise” in question needs to be spelled out more precisely. Presumably, anti-panpsychists would argue that there is a “giving rise” relation that meets Strawson’s intelligibility requirement (2008b, 70). For the sake of argument, let us suppose that Strawson is right. We should therefore explore a different strategy to accommodate the experiential in the physical world. As it happens, the panpsychist believes that her view is up to the task for it escapes the impossibility of bridging the mental/non-mental divide.

In what follows, I will show how the version of the powerful qualities view I wish to defend here offers a promising framework for elucidating a version of Powerful Qualities Panpsychism. In particular, I will argue that the Dual-Aspect Account (Chapter 4) provides the panpsychist with a way to illuminate the notion of a microphenomenal property. On the resulting conception, every microphenomenal property has dispositional and microphenomenal aspects. By doing so, I will show how the Dual-Aspect Account fares well with Heil's third requirement for a successful ontology, namely its applicability to illuminate other philosophical puzzles (2012, 288).

On Powerful Qualities Panpsychism, some microphysical entities have microphenomenal properties that possess dispositional and microphenomenal aspects. On this view, as I will explain, a quark may have a microphenomenal property by virtue of which it has some powers *and* there is something it is like to be a quark. Presumably, the reader who thinks that Panpsychism is a crazy view would think the same of Powerful Qualities Panpsychism. My hope is that the theoretical merits of Powerful Qualities Panpsychism will induce such a reader to reconsider her judgment.

Powerful Qualities Panpsychism escapes an important worry that Panpsychism faces: it is possible that microphenomenal properties are causally inert and therefore undetectable. Panpsychism does not rule out this possibility. The panpsychist might downscale this worry by claiming that microphenomenal properties "serve as the grounds for macrophenomenal properties" (Chalmers 2016a, 27). By virtue of playing this grounding role, microphenomenal properties would not be completely inert. However, the notion of ground in question does not seem to be a causal one. For example, Chalmers thinks of it as an *obtaining relation* between truths (2016a, 25). Accordingly, we could say that truths about macrophenomenal properties obtain in virtue of truths about microphenomenal ones. It appears that causally inert microphenomenal can play this grounding role. Therefore, we should explore a different strategy to address this worry.

Powerful Qualities Panpsychism is a more promising option. On this view, the microphenomenal properties have dispositional features that empower their bearers in distinctive ways. So microphenomenal properties would not be causally inert. For example, if a photon were to possess a microphenomenal properties, it would have some powers by virtue of it (perhaps the power to affect measuring devices) and some microphenomenal features by virtue of which there is something it is like to be a photon.

Now a question arises: is there any argument for the truth of Powerful Qualities Panpsychism? Fortunately, yes. Here is a simple one:

- (1) If the powerful qualities view is true, then all fundamental properties have essentially dispositional and qualitative aspects.
- (2) Among the qualitative aspects of fundamental properties, there are microphenomenal aspects.
- (3) Some fundamental microphysical entities have fundamental powerful qualities.

If (1) and (3), then:

- (4) Some fundamental microphysical entities have essentially dispositional and microphenomenal aspects.

Call *microphenomenal aspect* the aspect of microphenomenal properties by virtue of which there is something it is like to be a microphysical entity. The previous argument links the powerful qualities view with the idea that microphenomenal aspects are a kind of qualitative aspect in order to establish Powerful Qualities Physicalism. The soundness of this argument is of course contentious. For the purposes of this section, I will focus on (2). However, a few remarks in favour of (1) and (3) are needed.

In Chapter 4, I argued at length that a powerful quality is best understood as a property having dispositional and qualitative aspects. These aspects are ways of being of the property that supervene upon it. On the proposed conception, which holds the standard view that what supervenes is no addition to being, aspects can be regarded as ontologically lightweight higher-order properties (See Chapter 3, §3.2 for a detailed characterisation of the notion of an aspect). I have already discussed some of the arguments in favour of the truth of the powerful qualities view (§6.2). Here I shall not repeat them.

Premise (3) is *prima facie* credible. I often mentioned charge and mass as putative examples of fundamental powerful qualities. They appear as properties that at once bestow upon their bearers distinctive powers such as that of producing electromagnetic or gravitational force, and contribute qualitatively to their make-up. By being charged and massive, a fundamental particle has a certain quantity of matter and charge. Of course, we cannot settle the question of what the fundamental microphysical entities are from the armchair. Yet the empirical adequacy of the powerful qualities view is a point in favour of its adoption.

The crucial premise is (2), which captures the idea that the qualitative comprises the phenomenal, or experientially qualitative. The former is a matter of how a thing is like by virtue of having certain actual properties. The latter is a matter of how a thing is like by

virtue of being conscious, or experientially aware. How can we establish the truth of premise (2)?

A straightforward strategy would be to tweak the notion of qualitativity for including the “what it is like”-ness of phenomenal properties. Qualitativity and “what it is like”-ness, or experientiality are cognate notions. For example, Sam Coleman claims that:

“Sufficient consideration of the notion of the intrinsically qualitative shows it to be indistinguishable from the notion of qualitative experiential.” (Coleman 2009, 94)

In favour of such a claim, Coleman offers two main considerations, which can be summarised as follows.

(1) To think of something as intrinsically qualitative (rather than qualitative relative to something else) is “*ipso facto* to think of a phenomenal quality” (Coleman 2009, 94).

To clarify (1), let us consider the example proposed by Coleman. Think of an experience of phenomenal redness and then “consider the sensation only in respect of its redness” (ibid.). According to Coleman, the phenomenal redness so considered is clearly qualitative; it is a matter of how something it is like.

(2) To say that something is qualitative is to say that there is an answer to the question: “what is it like?” which is, as Coleman puts it, “our best way of drawing attention to the qualitative, conscious-experiential properties” that a thing enjoys (2009, 96).²⁶

²⁶ Coleman offers a third consideration in favour of the claim that qualities are indistinguishable from phenomenal properties. He says that the qualities and phenomenal properties share “an essentially exclusive nature” (2009, 102). That is, distinct qualities cannot occupy the same location. One thing cannot be red all over and blue all over at once. However, it is unclear how to precisely understand this claim. Coleman’s meaning of location is akin to “the space of possibilities” or “metaphysical space” (ibid.). Therefore, Coleman’s claim is that two qualities cannot occupy the same metaphysical space for their nature is such that they exclude any overlapping (Coleman 2009, 102–103). The same would hold for phenomenal properties. For example, to use Coleman’s example, in grasping phenomenal redness, we “understand that it is qualitatively red *and not any other way*” (2009, 103). The idea is that a location in the metaphysical space occupied by a phenomenal property cannot be occupied by other ones. It is unclear whether Coleman’s remarks help us linking qualities and phenomenal properties. Many non-qualitative properties seem to possess such an exclusive nature. For example, being unbreakable and being disposed to shatter seem to exclude each other.

According to Coleman, the previous considerations support the idea that “something being a certain qualitative way with respect to absolutely nothing but itself just *is* the idea of the experientially qualitative” (2009, 97). This view seems to imply that the mass and charge of a quark, for example, contribute to its make-up in experiential terms: there is something it is like to be charged and massive for the quark.

If we were to follow Coleman (2009), we would reach the surprising conclusion that the powerful qualities view amounts to Powerful Qualities Panpsychism: if the qualitative and the experiential (the phenomenally qualitative) are the same, then the qualitative aspects of powerful qualities would be phenomenal. Thus if microphysical entities have powerful qualities, they also have phenomenal aspects.

A conception of powerful qualities is tailored to Coleman’s view. He does not deny that microphysical properties are dispositional (2009, 87–88). On his version of Panpsychism, charge disposes to generate an electromagnetic force and gravitational mass disposes to generate a gravitational force. But the nature of charge and gravitational mass is not exhausted in their dispositions; it comprises phenomenal features as well.

On closer inspection, however, there are reasons to reject the identity between the qualitative and the experiential. If we adopt it, an implausible proliferation of phenomenal properties takes hold. Recall that qualitativity is a matter of how a thing is like (in terms of its make-up) by virtue of possessing some actual properties. A marble has the property of being spherical, which is clearly qualitative in this sense. However, it seems implausible, even for the panpsychist, to claim that there is something for the marble to be spherical. In general, it is desirable to preserve a distinction between the qualitative and the experientially qualitative (cf. Carruth 2016). This allows us to escape the implausible consequence that being spherical, which is a paradigmatic quality, is a phenomenal property of a marble. Even Coleman acknowledges this distinction. Elsewhere, he says that “the basic building blocks of the physical world are qualitative without being yet phenomenally qualitative (i.e. intrinsically conscious)” (Coleman 2015, 66).

Crucially, the panpsychist does not need to rule out that fundamental entities have some qualitative and yet non-experiential properties. This is because the truth of the version of Panpsychism under scrutiny only requires that some fundamental entities have microphenomenal properties. Unfortunately, considerations in favour of this view remain speculative. It is up to the panpsychist to provide more compelling reasons for thinking that fundamental properties have, as I put it, qualitative and experiential aspects.

Now let us return to the Dual-Aspect Account. While it does not help us adjudicating the question of whether Powerful Qualities Panpsychism is true, this account has another

merit: it has the theoretical resources for capturing the distinction between qualitativity and experientiality.

We can distinguish between qualitative aspects and experientially qualitative, or *phenomenal ones* by considering their different contribution to the make-up of a bearer. A property has a qualitative aspect if its possession contributes to the make-up of a bearer of that property in a *non-experiential way*. By contrast, we can say that property has phenomenal or microphenomenal aspect if its possession contributes to the make-up of a bearer in an experiential way. The distinction allows us to discriminate between qualitative properties, such as that of being spherical, and phenomenal ones, such as that of being in phenomenal pain. The distinction leaves open the possibility that a property may have qualitative *and* phenomenal (or microphenomenal) aspects. For example, the panpsychist could say that charge qualitatively *and* experientially contributes to the make-up of a quark: by being charged, the quark has a qualitative, occurrent make-up and, simultaneously, there is something it is like for it to be charged.

More precisely, we can relate the possession of a property having a phenomenal or microphenomenal aspect and the “what it is like”-ness as follows.

Phenomenal Aspect: a property P has some phenomenal or microphenomenal aspects if and only if there is something it is like to have P for every bearer of P.

We are now in a position to elucidate Powerful Qualities Panpsychism. This is the view that some fundamental microphysical entities have some (i) dispositional, (ii) qualitative, and (iii) microphenomenal aspects. If Powerful Qualities Panpsychism is true, then putative fundamental microphysical entities such quarks and photons have powerful qualities that (i) empower them in a distinctive way, (ii) qualitatively contribute to their actual make-up, and (iii) there is something it is like to have these properties. The Dual-Aspect Account allows us to make Powerful Qualities Panpsychism more precise. This is a point in favour of its applicability.

Overall, Powerful Qualities Panpsychism appears to be an attractive option: (i) it escapes the objection that impossible to bridge the mental/non-mental divide (Strawson 2008b, 63–65); (ii) it preserves the distinction between qualitativity and experientiality; and (iii) it captures the dispositionality of microphysical properties in terms of dispositional aspects. The Dual-Aspect Account offers a fertile ground from developing such a view.

Unfortunately, Powerful Qualities Panpsychism faces a major challenge that affects every form of Panpsychism: the so-called *combination problem* (Seager 1995). Given our

focus on properties, the combination problem can be understood as the problem of explaining how the microphenomenal properties combine into the macrophenomenal ones that humans and other animals can possess (see Chalmers 2016b for other versions of the combination problem). The difficulty rests on the idea that phenomenal properties “don’t sum”, so to speak. Paraphrasing William James, “take a hundred” of phenomenal properties, “shuffle them and pack them as close together as you can” and yet “each remain the same” phenomenal property it always was (James 1895/1950, 160). If James were right, we would not be able to get macrophenomenal properties by combining microphenomenal ones for each microphenomenal property would remain the same. As it stands, the Dual-Aspect Account seems unable to provide us with any insightful way to address the combination problem.

The panpsychist holds that her view is preferable to Physicalism for it evades the alleged impossibility of bridging the gap between the conscious and non-conscious. However, in the absence of combination principles that govern the passage from the microphenomenal to the macrophenomenal, it is unclear whether the combination problem can be solved. As Chalmers puts it: “a reasonable goal here is to either solve the combination problem or prove that it cannot be solved” (2016b, 180). It is beyond the scope of this work to achieve either of these goals. My aim in this section was different, namely to show how the ontology of powerful qualities is a natural ally for the friend of Panpsychism. In particular, I showed how the metaphysics of aspects I defended in this work allows us to improve the precision of such a view. This is yet another merit of the Dual-Aspect Account.

6.4 Taking Stock

6.4.1 Review

In what follows I shall review the main claims that I have defended in this dissertation and offer a brief summary of each chapter. To conclude, I will point out some topics that require further investigation in light of what has been discussed so far. To begin with, the central thesis that I have defended is that:

- (1) All fundamental properties are essentially dispositional-and-qualitative, or powerful qualities.

The thesis (1) offers an answer to the first question that I examined in this dissertation: “What is the most adequate conception of fundamental properties?” I argued that we ought to adopt

a conception of powerful qualities in the interest of capturing the world as we find it in everyday life and scientific investigation.

The second question that I examined was “What is the ‘big picture’ world-view that we get according to such a conception?” I devoted this chapter to describe it. Throughout the dissertation, I argued that the powerful qualities view’s big picture world-view is preferable to those offered by its main rivals: Dispositionalism and Categoricalism.

In Chapter 1, which served as an introduction to the dissertation, I laid out the assumptions and motivated the importance of investigating a theory of fundamental properties.

In Chapter 2, I illustrated two important conceptions of fundamental properties: dispositional and categorical. In §2.1 I discussed the significance of what is at stake with the distinction between them. As I explained, the choice between dispositional and categorical properties leads to two opposing views about the world and its laws of nature. In §2.2, I focused on Dispositionalism, the doctrine that all fundamental properties are essentially dispositional, or powers. Here I presented its merits and discussed some standard objections against it. In §2.3, I offered an overview of Categoricalism, the view that all fundamental properties are essentially qualitative, or qualities. As for Dispositionalism, I assessed the merits of Categoricalism and discussed some standard objections against it. In §2.4, I discussed a misleading characterisation of the power–quality distinction. In particular, I argued that on some interpretations, the distinction between powers and qualities fail to demarcate a real, ontologically robust distinction between two kinds of fundamental property.

In Chapter 3, I illustrated and defended the metaphysics of powerful qualities. In §3.1, I argued that if we aim to capture the world adequately as we find it, then we need a conception of properties that do not separate the dispositional from the qualitative. The powerful qualities view serves this purpose well. In §3.2, in order to elucidate the idea of powerful qualities, I introduced the novel notion of an *aspect*. In slogan form: aspects are ways of being of properties. More precisely, aspects can be understood as higher-order properties with some important qualifications: (i) the aspects of a property supervene upon it (and therefore do not constitute a genuine addition to being with respect to properties); and (ii) it is the nature of a property that determines the aspects it has. In the same section I motivated and defended these commitments.

The second central claim that I have defended in this dissertation is that:

(2) Powerful qualities are best conceived of as properties having dispositional and qualitative aspects.

In §3.3, I presented the Identity Theory, which is the canonical version of powerful qualities. As its name suggests, the Identity Theory is committed to a distinctive identity claim between a property's dispositionality and its qualitativity. However, this is not the only commitment of the identity theorist. The Identity Theory is best understood as holding the following claims.

Powerful Qualities View: all fundamental properties are essentially dispositional-and-qualitative.

Partial Consideration: every sparse property can be considered as dispositional or qualitative.

Inseparability: the dispositionality and qualitativity of every sparse property cannot be separated in reality.²⁷

Identity: a property P's dispositionality is P's qualitativity, and each of these is P.

The *Identity* claim is controversial. On a canonical understanding of the qualitative as non-dispositional, it implies that a property is at once dispositional and non-dispositional. Of course, this would be contradictory. However, the identity theorist does not think of qualitative as non-dispositional. This allows her to evade the charge of contradiction. Yet the question of how to make sense of *Identity* remains. As it happens, the identity theorist hints at different readings. In order to disambiguate the Identity Theory, I proposed a distinction between an ontological sense and a conceptual sense of *Identity*.

According to an ontological sense, *Identity* can be reformulated in terms of aspect as follows:

²⁷ In its canonical form, the powerful qualities view is a doctrine about fundamental properties. However, the powerful qualities theorist extends *Inseparability* to sparse, non-fundamental properties as well as fundamental ones. Here I acknowledge a distinction between sparse and fundamental properties (Schaffer 2004). Sparse properties are those invoked by all scientific disciplines such as physics, chemistry, biology, and so on. The fundamental ones are only those invoked by fundamental physics. On this conception, fundamental properties are a subset of the sparse ones.

Identity_o: there is no real distinction between a property P's dispositional aspect and P's qualitative aspect, and each of these aspects belongs to one and the same property P.²⁸

In the conceptual sense, there are two possible interpretations of *Identity*:

Identity_c: the dispositional way of conceptualizing a property P and the qualitative way of conceptualizing P are ways of conceptualizing one and the same property P.

Identity_d: the dispositional description of a property P and the qualitative description of P denote one and the same property P.

The proposed readings of *Identity* offer a way to resist the contradiction objection against it. However, in §3.4, I showed that each of the proposed readings, on closer inspection, is open to further objections. We should therefore explore an account of powerful qualities that is not committed to *Identity*. Crucially, the view that all fundamental properties are powerful qualities is independent from the view that a property's dispositionality is identical with its qualitativity. It is therefore possible to articulate an alternative, more promising account of powerful qualities that is not committed to *Identity*. This has been the third main claim that I have defended in this dissertation.

(3) The view that all fundamental properties are powerful qualities is independent from *Identity*.

In Chapter 4 I illustrated an alternative and more promising account of powerful qualities. I called it "Dual-Aspect Account" for the notions of dispositional and qualitative aspects play a central role in this view. In §4.1 I laid out the metaphysical backbone of the Dual-Aspect Account. There I offered some considerations in favour of the adoption of two-category ontology of substances, or property-bearers, and properties. In §4.2 I defended the Dual-Aspect Account from the objection that powerful qualities do not have aspects (Heil 2003, 118–120). I argued that such an objection targets only an ontologically robust conception of

²⁸ Recall that a powerful quality may have more dispositional and qualitative aspects (Chapter 3). The identity claim in question concerns every aspect dispositional and qualitative aspects a powerful quality has.

aspects, according to which aspects are first-order properties. Here I also distinguished the Dual-Aspect Account from other dual aspect views of properties such as that of Kristina Engelhard's (2010) and Henry Taylor's (2018). From the viewpoint of the Dual-Aspect Account, aspects *are not* first-order properties. As such, it is possible to resist the previous objection. I then proposed to formulate the notion of a powerful quality as follows.

Powerful Quality: a property P is a powerful quality if and only if (1) P has some dispositional aspects and (2) P has some qualitative aspects.

In §4.3, I discussed commonalities and differences between the Dual-Aspect Account and the Identity Theory. Overall, the Dual-Aspect Account is preferable to the Identity Theory for two reasons: first, it avoids the commitment to *Identity*, which does not seem to hold in any of the proposed readings; second, it improves the precision of the claims held by the powerful qualities theorist.

According to Heil, the success of an ontological view can be informally measured in three respects (2012, 288): (i) its internal coherence, (ii) its applicability to illuminate other philosophical puzzles, and (iii) the plausibility of its resulting big picture world-view. By avoiding the commitment to *Identity*, the Dual-Aspect Account meets (i). I devoted the remainder of the dissertation to show that the Dual-Aspect Account fares well with (ii) and (iii).

In Chapter 5, I showed the applicability of the Dual-Aspect Account with respect to the topic of resemblance. Any satisfactory view of properties must provide the conditions for resemblance among properties. I argued that the Dual-Aspect Account offers a serviceable machinery for analysing resemblances among properties. In §5.1 I identified two resemblance relations that any account of properties ought to accommodate: exact resemblance and partial resemblance. In §5.2 I discussed a comparison between the analysis of resemblance respectively from the viewpoint of the Identity Theory and the Dual-Aspect Account. I argued that the Dual-Aspect Account is preferable for its greater precision in specifying the conditions for exact and partial resemblance. In the same section, I examined a comparison with David Armstrong's theory of partial resemblance (1989a, 102–107; 1997 51–57), which differs greatly from the one offered by the Identity Theory. I argued that the Dual-Aspect Account could claim two advantages: (i) it allows us to specify more precisely the conditions for resemblance among properties in term of aspects; (ii) it allows partial resemblances among simple properties.

In Chapter 6, I discussed three arguments in favour of the thesis that all fundamental properties are powerful qualities. In §6.1 I laid out the purposes of the chapter. In §6.2 I considered the Actuality Argument, the Independence Argument, and the Knowability Argument for fundamental powerful qualities. The Actuality Argument and the Independence Argument begin by supposing that all fundamental properties are powers and establish that they have qualitative, non-dispositional features: their actuality and the ontological independence from their manifestations. As such, fundamental properties would turn out to be powerful qualities and not powers. The Knowability Argument begins by supposing that all fundamental properties are qualities and shows that they have dispositional feature. Therefore, the fundamental properties would be, also in this case, powerful qualities. Moving on, I discussed the ‘big picture’ world-view that emerges from the Dual-Aspect Account. As a test case, I focused on the question of how to accommodate phenomenal properties in the physical world. In §6.3, I first sketched a version of Powerful Qualities Physicalism. Then I outlined a version of Powerful Qualities Panpsychism. The Dual-Aspect Account entails neither view. However, it permits to make both views more precise. While the decision rests on independent factors, this has been sufficient to show the applicability of the Dual-Aspect Account and offers fertile ground for future investigations. Overall, the Dual-Aspect fares well with the requirements for being a successful ontology: it is therefore a serious contender among theories of fundamental properties.

6.4.2 *Further work: Fundamentality*

In this dissertation, I assumed that the fundamental properties of our world are those that “suffice to characterise things completely and without redundancy” and “figure in a minimal basis on which all else supervenes” (Lewis 1986a, 60; 2009, 205). It is worth noting, however, that this is only one among many conceptions of fundamentality (see Wilson 2014, 2016; Bennett 2017; Tahko 2018 for an overview). Thus the question of whether some accounts of fundamentality are better-suited to accommodating the ontology of powerful qualities remains. This investigation may unveil the incompatibility between the Dual-Aspect Account and some conceptions of fundamentality. However, this requires us firstly to elucidate the notion of fundamentality. It was not possible to fulfil this task in this work. Moreover, certain standard views of fundamentality have recently faced serious objections that target the canonical formal features of fundamentality relations: irreflexivity, asymmetry, and transitivity (Jenkins 2011; Schaffer 2012; Wilson 2014; 560, 2016, 192–193; Barnes 2018; Bennett 2017, 138; Bliss 2018; Tahko 2018). Therefore, we should

investigate further whether the adopted conception of fundamentality is indeed a suitable one.

6.4.3 *Further work: Compositionality*

According to some powerful qualities theorists, the building blocks of reality are fundamental propertied-substances (Chapter 4). Such substances are “mereologically simple”: they lack substantial proper parts (Heil 2012, 19). However, the powerful qualities theorist does not deny the existence of intuitively composite objects such as humans, chairs, and tomatoes. For example, Heil says:

If substances are simple, then tomatoes are not substances. Indeed, most of the objects that we talk about, manipulate and investigate scientifically are not substances. In saying that tomatoes are not substance, I am not suggesting that talk of tomatoes is false or misleading. I am not a “nihilist”, not an “eliminativist” about tomatoes. To get a feel for what I am saying, think of Locke. For Locke the only genuine material substances are the corpuscles, Newtonian atoms. Tomatoes are particular dynamic, *interrelated arrangements* of corpuscles. [...] This tomato is ... a fleeting, *dynamic arrangement* of substances, a particular way the substance—the corpuscles—are *interactively arranged* at a particular time. (Heil 2012, 19; emphasis added)

You could say that a complex is a particular way, the complex making up a tomato is the red way, but in that case the “way” is the ways these constituents [simple substances] are *organized*. The tomato’s “being the red way” just *is* a matter of the tomato’s constituents being as they are *organized and interrelated* as they are. (Heil 2012, 21; emphasis added)

According to this view, ordinary macroscopic objects *are* what you get when you arrange fundamental propertied-substances in certain ways. As discussed in §6.3.2, Heil (2012) invokes the notion of an arrangement to account for the existence of consciousness from a physicalist perspective. Unfortunately, details about the formation of such arrangements are missing. This leaves unanswered several important questions: what are the conditions for arrangement formation? In virtue of what substances can arrange with other substances? Is the notion of an arrangement formation an irreducibly compositional one?

On the powerful qualities view, it is possible to answer the first two questions by appealing to the dispositionality of fundamental propertied-substances. William Jaworski

(2016), who endorses the Identity Theory, offers a similar strategy. According to him, some fundamental powerful qualities have the power:

[T]o configure (or arrange, order, or organize) materials. Each structured individual organizes or configures the materials that compose it. I configure the materials that compose me, and you configure the materials that compose you. Describing the way each of us configures our respective materials is something thathylomorphists say is an empirical undertaking—in our cases, an undertaking left largely to biology, biochemistry, neuroscience, and other biological subdisciplines. Collectively, these disciplines are likely to deliver long, complicated descriptions of cells, tissues, and organ systems, along with their characteristic activities, capacities, and interrelations. (Jaworski 2016, 95)

The resulting view offers an elegant account of the existence of structured, or composite objects. However, it is unclear to what extent it fits with the Dual-Aspect Account. The question, and indeed a good one, of whether compositional notions such as that of an arrangement can be adequately understood in terms of dispositionality remains to be explored.

6.4.4 Further work: *Consciousness*

In this chapter I sketched how it is possible to accommodate the existence of phenomenal properties in the natural world from the viewpoint of the Dual-Aspect Account. However, several important issues have been intentionally set aside. Perhaps the most pressing one concerns the bearers of phenomenal properties.

The question that needs to be further investigated is: what kinds of entity can instantiate phenomenal properties? Philosophers of mind disagree. To avoid unnecessary complications, I assumed that phenomenal properties can be instantiated by entities like humans and other animals such as Luna the cat and Fido the dog. But this assumption is controversial. In §6.3.2 I submitted that phenomenal properties can be plausibly regarded as powerful qualities by tweaking the notion of qualitativity. It is therefore possible to claim that that some entities can instantiate phenomenal powerful qualities during conscious experiences. However, it is far from being clear whether this approach is viable for those who take phenomenal properties to be properties *of experiences* (e.g. Dennett 1991; Chalmers 1996; Strawson 2008b, 152–153; Kriegel 2015). We should explore the possibility of regarding the phenomenal properties of experience as powerful qualities. If we take

seriously the idea that phenomenal properties are the mark of conscious life, this investigation cannot be ignored in future.

6.4.5 Conclusion

The overarching goal of this dissertation was to defend a novel theory of fundamental properties that captures adequately the world as we find it in everyday life and scientific investigation. I argued that the ontology of powerful qualities, primarily championed by John Heil (2003; 2012) and C.B. Martin (2008), offers a promising framework for this purpose. Throughout the chapters that compose this work, I defended the thesis that:

- (1) All fundamental properties are essentially dispositional-and-qualitative, or powerful qualities.

I argued at length for the superiority of the powerful qualities view as compared to its main rivals: Dispositionalism and Categoricalism. However, I also argued that it is difficult to make sense of the Identity Theory, which is the canonical version of powerful qualities. I then presented the Dual-Aspect Account as a promising alternative. By introducing the notions of dispositional and qualitative aspects, I showed that:

- (2) Powerful qualities are best conceived of as properties having dispositional and qualitative aspects.

And:

- (3) The view that all fundamental properties are powerful qualities is independent from *Identity*.

Once *Identity* is abandoned, a more promising view of powerful qualities emerges: the Dual-Aspect Account. Of course, some of its applications remains to be explored in future works. In this dissertation, I have not done more than defending the tenability of the Dual-Aspect Account and showing some of its most important merits. But this has been sufficient for establishing that the Dual-Aspect Account is a serious contender among theories of fundamental properties.

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