

# The Definitional Conception of Essence

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# Abstract

An essential property of a thing tells us about the real definition of that thing. In this dissertation, I argue that a real definition states conditions on the identity of things and explains how they differ from other individuals or members of other kinds. I then apply this account to show that some essential properties are discovered by science. I also argue contrary to reductionist accounts of essence and show that several of Kit Fine's applications of the notion of essence to ontological dependence and to the reduction of modality, are spurious. Finally, I argue that the real definition of each human person accounts for their personal identity over time.

# Dedication

To my parents and grandparents, for their support and prayer.

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# Introduction

When I first decided to write on the notion of essence, I remember driving past a billboard which said, “love is the essence of care.”

My no doubt blurry impression of common usage is that the ‘essence’ of a thing is, basically, what is important to it.

A doctor finds a patient in desperate need of surgery. She tells her staff, “time is of the essence.”

When I mentioned to a friend of mine that I was working on essential properties, he said that he always thought I would be good at real estate.

And I dare you to take a look at all the products with the label ‘essence’ or ‘essential’ next time you visit your favorite natural and organic foods store.

“Time is of the essence” could easily be translated “time is really important right now.”

A real estate company called “Essential Properties” could easily be renamed “Important Properties,” although one wonders whether some consumers might find that a bit on the nose.

Lemon essence ought to give you the important or distinctive sense of lemon, rather than the waxy smell of the rind. Otherwise, you’d do well to take note of the store’s return policy.

A good diet is essential to health because a good diet is important to health. In fact, it is in some sense necessary for it.

But why not simply use ‘important’ instead? A charitable conjecture would be that ‘essential’ at least usually adds something more than the humbler ‘important’ suggests: what is essential is what is important in a way that is deep, distinctive, or, dare one say, necessary.

And thus, one can agree with the authors of the billboard’s slogan. Sure, maybe love (of the Thomistic variety) is important in a deep, distinctive, or necessary way to (good) care.

But if those authors were to scan the pages of what follows, I’m afraid to say they would not find the deep, distinctive, or necessary way they had in mind attested to. And for better or for worse, I have included little by way of remark on the real estate market.

There is a philosophical tradition of reflection upon essence. It issued forth from the very fountainheads of Western philosophy: Plato and Aristotle. In this tradition, essence is said to have particular bearing on metaphysics or, more specifically, the metaphysics of identity. And one often hears talk of essence as what it is to be a thing or as bearing on a thing’s definition. The foremost contemporary representative of this tradition is Kit Fine, whose paper “Essence and Modality” (Fine, 1994) set the agenda for much that has followed.

I’m no lexicographer. But It strains my linguistic powers to find a univocal sense of depth and importance by which we may equate the common meaning of the term with its philosophical meaning. Hence, I believe that this is a place where common and philosophical usage depart.

Supposing such a conjecture is correct, it should not be unwelcome. For it shows that philosophy, and metaphysics more specifically, includes applicable concepts original to itself. Thus, the content of philosophical knowledge does not derive entirely from commonsense or scientific inquiry. And yet, as I will show throughout, the philosophical concept of essence has bearing on both common and scientific notions,

and both common and scientific notions have bearing on it.

The topic of this dissertation is the philosophical concept of essence. As I will argue, the philosophical concept indeed has a great deal of significance for metaphysics, in particular, on modality, explanation, the status of biological species, and our identity over time.

In the first chapter, I describe the definitional conception of essence. Central to my view is the claim that the essential properties of a thing are those properties mentioned in its real definition. I require that real definitions meet two conditions, which together ensure that essence both bears on the identity of a thing and that it does so in a deep way.

Much of what I say about essence is downstream of my theory of real definition. The centrality of this theory of real definition to our understanding of essence is among the unifying themes of this work.

In the second chapter, I argue against recent attempts to reduce essence to metaphysical modality. Since the days of “Essence and Modality,” no one has seen it fit to reaffirm, in the teeth of Fine’s arguments, the old claim that an essential property is simply a property had by a thing in every possible world or in every possible world where that thing exists.

Nevertheless, some have held on to the hope that essence can in some way be analyzed as or reduced to metaphysical modality. For example, perhaps, we can add some further condition to the modal notion of essence and thus analyze or reduce Fine’s notion. I argue to the contrary of some recent proposals along these lines.

In the third chapter, I begin my consideration of Fine’s positive claims about the notion of essence. Fine says that there is a distinctively ontological notion of dependence seen in sentences such as ‘sets depend on their members’. He further argues that this notion can be analyzed or reduced using the notion of essence he discussed in his earlier work: one thing ontologically depends on another when the

former has an essential property including the latter as a constituent. I argue that this fails to provide a sufficient condition on ontological dependence. This can be seen by reflection upon the claim that biological species have essences which make reference to their place on the tree of life.

In the fourth chapter, I discuss Fine's proposal, the inversion of the modal reductionist's, that metaphysical modality reduces to essence. Fine's reduction of modality, I argue, requires not only that you and I individually have an essence but that the two of us taken together have an essence. The collective essence of some individuals is not merely the sum of its parts. It includes further properties Fine requires to furnish the modal landscape. Nevertheless, it is due to this appeal to collective essence that Fine's reduction must fail. For I say, along with Fine and others, that essence always tells us about identity. And identity, being one-one, cannot be many-many. Hence, the collective essences to which Fine appeals are fleeting.

In the fifth chapter, I turn to issues of the personal identity over time. A well-known thesis in that literature is the view of David Wiggins, that an individual's criteria of identity over time or facts about its persistence depend on the sortal (kind) to which that individual belongs. I argue that given this thesis, it follows that facts about personal identity depend on facts about that person's essence. Since essence is something that holds regardless of the attitudes and practices of a person or a community of persons, a person's identity over time, too, does not depend on these things, thus contradicting the popular view known as conventionalism.

To conclude this introduction, I believe that some brief remarks on terminology and my use of variables are in order.

An individual is anything that is identical to something. Often, individuals can be picked out by proper names. The variables, ' $x$ ', ' $y$ ', ' $z$ ', and so on, have individuals as values. Thus, an individual is anything identical to some  $x$ .

Socrates, the historical person, was an individual. Some say he is still one, though

not at this moment; some do not. Nevertheless, Socrates and his singleton are among my stock examples of individuals. And since it is tedious and unnatural to state claims about Socrates and his essential properties in the past tense, I will often say things like ‘Socrates is essentially a human person’. I do not mean to take one side or the other on this debate by doing so, however.

A property is the semantic value of a predicate. When a predicate, say, ‘is brown’, applies, it picks out something about the individuals to which it applies, which we may denote by the term ‘brownness’ or by its ‘being brown’. I do not think that properties are predicates. Nor do I assume that the terms ‘property’ and ‘predicate’ can be used interchangeably. My variables for properties are ‘ $P$ ’, ‘ $Q$ ’, ‘ $R$ ’, and so on.

My sense of ‘property’ is, roughly, (Lewis, 1983, pp. 343–347)’s abundant sense. I do not assume, however, that properties are sets. The crucial feature of Lewis’s notion, for me, is its assumption that whenever there is a predicate, ‘is  $F$ ’, with a non-empty extension, there is a property, ‘ $F$ -ness’ or ‘being  $F$ ’, which all and only the members of that extension have. I adopt this assumption going forward.

A ‘kind’ is the semantic value of a general term, examples of such terms being ‘gold atom’, ‘human person’, and ‘philosopher’. When a term picks out a kind, it at least picks out something for which it is possible for individuals to belong as members. I do not assume that a kind is a property. My variables for kinds are ‘ $K$ ’, ‘ $K_1$ ’, ‘ $K_2$ ’, and so on.

I think natural kinds are at least the kinds that the natural sciences can theorize about or with (LaPorte, 2004, p. 19). But since there are general terms with a semantic value which is not the object of scientific study, not all kinds in my sense are natural kinds.

I use italics when mentioning propositions, rather than single quotes. I do not assume propositions to be sentences. My variables for propositions are ‘ $p$ ’, ‘ $q$ ’, ‘ $r$ ’, and so on. I assume real definitions are propositions.

I have avoided quasi-quotation.

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# Chapter 1

## Essence and Real Definition

### 1.1 The Concept of Real Definition

Aristotle relates the notion of an essential property to a thing's real definition when he says,

Essential attributes are such as belong to their subject as elements in its essential nature (e.g. line thus belongs to triangle, point to line; for the very being or 'substance' of triangle and line is composed of these elements, which are contained in the formulae defining triangle and line) (Aristotle, 2001, APo., 73a34)<sup>1</sup>.

More recently, Kit Fine tells us,

It has been supposed that the notion of definition has application to both words and objects—that just as we may define a word, or say what it means, so we may define an object, or say what it is. The concept of essence has then taken to reside in the “real” or objectual cases of definition, as opposed to the “nominal” or verbal cases. (Fine, 1994, p. 2).

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<sup>1</sup>The more standard (Aristotle, 1984), is less clear on the fact that Aristotle is here stating an account of a property's being essential, though the translator agrees on this. See (Barnes, 1998, p. 112), his later commentary on this passage.

We may summarize this sense of the terms ‘essence’ and ‘essential property’ in the following equivalences: the essence of an individual,  $x$ , consists of all and only those properties which are mentioned in a real definition of  $x$ . And a property,  $P$ , is essential to  $x$  just in case it is mentioned in  $x$ ’s real definition. Understood in this way, essential properties are defining properties. And so we may call this sense of the terms ‘essence’ and ‘essential property’ **the definitional conception of essence**.

For Fine, as for Aristotle, a real definition is a definition of the individual itself and not a definition of our concept of or word for that individual. In this way, real definitions are distinct from conceptual or linguistics analyses.

I understand Fine’s term “objects” to designate individuals, such as Socrates. But the notion of essence and real definition also applies to kinds, such as humanity and the kind gold (the element described on the periodic table).

Thus, a property,  $P$ , is essential to a kind,  $K$ , just in case  $P$  is mentioned in the real definition of  $K$ . And again, the essence of the kind consists of all and only its essential properties.

Real definitions of kinds are among the most paradigmatic. For example, several authors have said that the real definition of the kind gold is the chemist’s definition: *gold is the chemical element with an atomic number of 79* (Oderberg, 2007, p. 91), (Kment, 2014, p. 161).

I agree with these authors that the chemist’s definition is the real definition of the kind gold. Moreover, on the chemist’s definition, having an atomic number of 79 is mentioned in the kind’s real definition. So it is an essential property of gold. So I think that the essential properties of the kind gold are among the most paradigmatic essential properties.

Like Fine, I believe that some individuals have real definitions. And I believe that among such individuals are human persons, such as Socrates. Nevertheless, to avoid unnecessary controversy, I will appeal to a different individual’s real definition

as paradigmatic.

Consider the real definition of the singleton set of Socrates. In agreement with Fine, I take that real definition to be something to the effect of *the singleton set of Socrates is the set whose sole member is Socrates* (Fine, 1995b, p. 276).

Many, probably most, agree that the notion of “essential property” is somehow related to a thing’s real definition.<sup>2</sup> And a number of philosophers have come to appreciate the significance of this notion of essence. Like these philosopher, I think the definitional conception of essence illuminates many areas of current philosophical concern.

In this work, I present many arguments which employ the concept of real definition. Should that concept prove inapplicable, I would not know how to salvage those arguments. Thus, much of what I have to say hinges on the notion of real definition. The aim of this chapter is to explain this concept by defending two necessary conditions on its application.

I would summarize these conditions, roughly, as follows: (i) a real definition tells us about the identity of an individual or of members of a kind; (ii) a real definition is an explanatory definition. These are meant, however, only as rough summaries. My exact statement of these conditions I provide in the following sections.

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<sup>2</sup>Besides Fine, see (Gorman, 2005, p. 288), (Oderberg, 2011, p. 98), (Koslicki, 2012, p. 196), (Lowe, 2012, p. 935), (Hale, 2013, p. 151), (Lowe, 2013, pp. 201–202), (Trogon, 2013, p. 474), (Torza, 2015, p. 766), (Dasgupta, 2016, p. 385), (Glazier, 2017, p. 2887), (Romero, 2019, p. 122), (Zylstra, 2019b, p. 342), (Wallner and Vaidya, 2020, p. 423), (Kment, 2021, p. 1964), (Passinsky, 2021, p. 944–945), (Raven, 2021, p. 1048), and (Vetter, 2021, p. 833).

There is another tradition which takes “real definitions” as statements of generalized identity. So far as I can tell this begins with (Dorr, 2007, p. 44–45) and is further developed in (Rosen, 2015), (Dorr, 2016, p. 72), (Correia, 2017), and (Correia and Skiles, 2019). (Rosen, 2015) denies that essence is connected to “real definition” in his sense, but (Correia and Skiles, 2019) and (Glazier, 2022) defend the claim that it is.

It is my belief that “real definition” in the sense used in the generalized identity literature is a homonym of my term “real definition.” I say this for two reasons: parties to that literature assume that (i) real definitions are sentences and (ii) that real definitions must be expressible in the form “to be *F* is to be *G*.” In my sense, a “real definition” is not a sentence. Nor must it be expressible in the form ‘to be *F* is to be *G*’, since the paradigmatic real definitions are neither definitions of properties nor sentences nor something else expressible only in a higher-order language but rather of individuals and kinds.

I do not presume to give a complete analysis of real definition. Nor are the equivalences I used to summarize the definitional conception of essence meant to suggest that we may analyze or reduce real definition to essence or vice-versa. The aim I have is clarification of the notions of real definition and of essence. My view is that one can clarify these notions without reducing them.

## 1.2 The Comprehensive Condition

Proponents of the definitional conception of essence agree that the essence of an individual is, somehow, related to its identity. Thus, Fine says,

For one of the central concerns of metaphysics is with the identity of things, with what they are. But the metaphysician is not interested in every property of the objects under consideration. . . .

For what appears to distinguish the intended properties is that they are essential to their bearers. (Fine, 1994, p. 1).

Moreover, Lowe says that “the essence of something,  $X$ , is *what it is to be  $X$* .” (Lowe, 2008, pp. 34–35) Lowe understands the formula ‘what it is to be  $X$ ’ as merely another way of expressing the identity of the individual in question, for he continues, ‘In another locution,  $X$ ’s essence is the very *identity of  $X$* .’ (Lowe, 2008, pp. 35)

I think the connection between essence and identity is best understood by example. Consider the real definition of the singleton set of Socrates. The singleton set of Socrates is defined as the set whose sole member is Socrates. Thus, what it is to be the singleton set of Socrates is to be the set whose sole member is Socrates.

In defining the singleton set of Socrates in this way, we are picking out a property that that set has in every possible world in which it exists. Moreover, if something has that property in a possible world, it is surely identical to the singleton set of

Socrates. Hence, it is metaphysically necessary that an individual,  $x$ , is identical to the singleton set of Socrates just in case  $x$  has Socrates as its sole member.

The same point can be made for kinds. What it is to be a gold atom is to have an atomic number of 79. Thus, a gold atom is defined as the kind of element whose members have an atomic number of 79.

In defining the kind gold atom in this way, we are picking out a property that its members have in every possible world in which they are members of that kind. Moreover, if something has an atomic number of 79 in a possible world, it is surely identical to a member of the kind gold atom. Hence, it is metaphysically necessary that an individual,  $x$ , is identical a member of the kind gold atom just in case  $x$  has an atomic number of 79.

I think that these examples illustrate how essence and identity are connected. What we see in the first example is that necessarily, all and only individuals which satisfy the real definition of the singleton set of Socrates are identical to the singleton set of Socrates. And likewise, what see in the second example is that necessarily, all and only members of the kind gold atom satisfy the real definition of the kind gold atom.

Hence, more generally, we may express the connection between essence and identity as the following pair of conditions on real definition:

(CC.I) For all possible worlds,  $w$ , and for all individuals  $x$  and  $y$ , if  $x$  is identical to  $y$  in  $w$  and  $y$  has a real definition in  $w$ , then in all possible worlds  $w'$  where  $x$  is identical to  $y$ ,  $x$  satisfies the real definition of  $y$  in  $w$ .

(CC.K) For all possible worlds,  $w$ , and for all individuals  $x$  and kinds  $K$ , if  $x$  is identical to a member of  $K$  in  $w$  and  $K$  has a real definition in  $w$ , then in all possible worlds  $w'$  where  $x$  is identical to some  $K$ ,  $x$  satisfies the real definition of  $K$  in  $w$ .

The conjunction of (CC.I) and (CC.K) I call the **comprehensive condition** on real definition.

The comprehensive condition expresses a connection between essence and identity. The connection between essence and identity is, in some sense, a deep one. Hence, in discovering the essence of an individual or kind, we discover deep facts about that individual or kind. As will become clear, however, definitions that satisfy only the comprehensive conditions will not always tell us deep facts about the individual or kind defined.

Nevertheless, my claim is that for a definition to tell us a deep fact about the *identity* of an individual or kind, it must satisfy the comprehensive condition.

I believe that it is metaphysically necessary that if something has an atomic number of 79, it is a gold atom. Moreover, I believe that it is metaphysically necessary that if something fails to have an atomic number of 79, it is not a gold atom. (CC.K) is formulated with the intent to ensure the truth of these conditionals.

What (CC.K) says, less exactly but perhaps more intuitively, is this. Suppose you satisfy the real definition of a gold atom in some world. Then, if you want to be a gold atom in any world, you need to satisfy that same real definition again, in every world where you are a gold atom.

Thus, suppose you are gold atom in a world because you have an atomic number of 79 and that the real definition of gold atoms in that world mentions solely the property of having an atomic number of 79. Do you want to be a gold atom in some (perhaps other) world? Then you must have an atomic number of 79 in that world. Otherwise, you fail to be a gold atom. And if you have it, then you succeed in being a gold atom.

Similarly, I believe that it is metaphysically necessary that if something is identical to the singleton set of Socrates, it has Socrates as its sole member. Moreover, I believe that it is metaphysically necessary that if something fails to have Socrates as its sole

member, it is not the singleton set of Socrates. (CC.I) is formulated with the intent to ensure the truth of these conditionals. But since I think it is clear that reasons similar to those I just gave regarding the conditionals supporting (CC.K) also apply here, I will omit an explanation of this.

The conditionals supporting (CC.I) and (CC.K) are not mere truisms. They express facts about the identity of the singleton set of Socrates and facts about the identity of members of the kind gold atom. I take it that that is why we should believe these conditionals are rightly prefixed with ‘it is metaphysically necessary that’.

A fact which asserts something about the identity of a thing holds in every possible world in which that thing exists because identity is a relation that holds between that thing and itself in every possible world in which that thing exists.

Consider, for example, the statement ‘Benjamin Franklin is identical to the first Postmaster General of the United States’. It is merely a contingent fact about Benjamin Franklin that he is identical to the first Postmaster General of the United States. Hence, this fact does not really express a fact about the relation of identity that Benjamin Franklin bears to himself. Rather, it is merely a circuitous way of saying that Benjamin Franklin has a certain property, namely, being the first Postmaster General of the United States.

What holds for the identity of individuals holds for the identity of kind members. If heat could fail to be mean kinetic energy, the statement ‘heat is identical to mean kinetic energy’ would either be false or a merely circuitous way of saying that heat has a certain feature.

In the actual world, the real definition of the singleton set of Socrates is *the singleton set of Socrates is the set whose sole member is Socrates*, and the real definition of the kind gold atom is *gold is the chemical element with an atomic number of 79*. (CC.I) and (CC.K) imply that to be identical to the singleton set of Socrates or a member of the kind gold atom even in some other world, one must meet the real

definitions that this individual and this kind have in the actual world.

In other words, there are no possible worlds where the real definition of the singleton set of Socrates suddenly says it is the set whose sole member is Wittgenstein's left foot or where the real definition of the kind gold atom says it is the element beloved by Kant. The real definition of a thing is the same in every possible world where that thing exists.

To suppose otherwise is just to suppose that the conditionals supporting (CC.I) and (CC.K) are false. For example, supposing that the real definition of gold is *gold is the chemical element beloved by Kant* in some world, would falsify the conditional that that it is metaphysically necessary that if something is a gold atom it has an atomic number of 79. For there are worlds where an element is beloved by Kant but lacks an atomic number of 79. And this would ensure the existence of gold atoms in this world. But I deny that Kant's love has the power to bring gold into existence. And so do all such things that fail to bring about that there is an element with an atomic number of 79.

Thus, in my view, to endorse the claim that the real definition of a thing is the same in every possible world where that thing exists is motivated by the same thought that leads me to adopt (CC.I) and (CC.K). It is just that we must say this in order for the real definition of a thing to express facts about that thing's identity.

In the following two sections, I will argue that the comprehensive condition entails two commonly held truths about the definitional conception of essence: (i) the traditional formula, that is the formula '— is what it is to be  $x$ ', can always appropriately tell us about the essence of  $x$ , and (ii) all essential properties of  $x$  are properties had by  $x$  in every possible world in which  $x$  exists. That it entails such truths is, I believe, further reason to endorse the condition.

### 1.3 The Traditional Formula

Recall that Lowe said that the essence of something is what it is to be that thing. More exactly, we might say that **the traditional formula** for an individual can be rendered as ‘— is what it is to be  $x$ ’.

The traditional formula dates back to Aristotle.<sup>3</sup> It is a formula by which one can generate sentences given as answers to a certain kind of question. That question is ‘what is it to be  $x$ ?’ The blank in the traditional formula is supposed to be where we put an answer to that question.

A similar formula can be used for kinds. Hence, the traditional formula for an answer to the question ‘what is it to be a  $K$ ?’ is ‘— is what it is to be a  $K$ .’

The traditional formula is commonly used to express the essence of an individual or kind. Although I find this practice to be sometimes less than wholly perspicuous, I think that when the question is rightly understood, its answer can tell us about the essence of an individual or kind.

More exactly, I think it can tell us the essence of a thing only if ‘— is what it is to be  $x$ ’ requires that we replace the blank with a phrase whose satisfaction is necessary and sufficient for identity with the individual or with a member of the kind. I now argue for this.

If asked ‘what is it to be a gold atom?’ it would be wrong to reply ‘the element which primarily composes the metal on my father’s wedding ring is what it is to be a gold atom’.

The element which primarily composes the metal on my father’s wedding ring is gold. So this answer expresses a sufficient condition on something’s being gold. But the metal on my father’s wedding ring could have failed to be gold, and there are

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<sup>3</sup>Specifically, his phrase ‘to ti ēn einai’. But Aristotle’s phrase uses the imperfect tense of the be-verb. He says ‘ēn’ instead of ‘estīn’. Thus, it is more accurately rendered as ‘the what it was to be’. According to (Oderberg, 2007, p. 262, fn. 25), “[n]o one is quite sure why Aristotle used the imperfect.” For more on Aristotle’s usage, see (Barnes, 1998, p. 174).

gold atoms that do not primarily compose my father's wedding ring. Thus, the fact that the metal on my father's wedding ring is gold doesn't tell us about what it is to be gold. So to give a sufficient condition, alone, on being gold does not answer the question 'what is it to be gold?'

The response 'a metal is what it is to be a gold atom' is a more felicitous answer to 'what is it to be gold?' This answer provides a necessary condition on something's being gold.

But it's clear that this is not the answer the questioner intended us to give. For it warrants the following reply: 'what is it to be this metal, *rather than any other kind of metal?*'

In general, if an answer to a what-is-it-to-be question fails to distinguish the individual or kind from all other individuals or all other kinds, we can always ask a contrastive follow-up. If  $y$  meets a necessary condition being  $x$  and we want to know what it is to be  $x$ , we can always ask, 'what is it to be  $x$ , rather than  $y$ ?' And similarly, if members of  $K_2$  meet a necessary condition on being members of  $K_1$ , we can always ask, 'what is it to be a  $K_1$ , rather than a  $K_2$ .'

However, since everything that meets the real definition of an individual or member of a kind is identical to that individual or to some member of that kind, real definitions meeting the comprehensive condition can answer any contrastive follow-up to 'what is it to be  $x$ ?' or 'what is it to be a  $K$ ?' For the  $y$  or  $K_2$  appearing in the contrastive clause, assuming that the initial answer appealed to the whole of  $x$ 's real definition, is identical to the  $x$  or  $K_1$  in question.

Moreover, since these contrastive follow-ups merely clarify the intent of the original question, it follows that an answer to the question 'what is it to be that thing?' must have as its answer a definition meeting the comprehensive condition. Thus, the traditional formula when understood in the correct sense can always appropriately tell us about the essence of some  $x$  or some  $K$ .

## 1.4 Essential Properties are Modally Essential Properties

In this section, I defend the claim that all essential properties of  $x$  are properties had by  $x$  in every possible world in which  $x$  exists.

In the discussion of this section and in many of my discussions going forward, the following distinction will prove invaluable. It is the distinction between **definitionally essential and modally essential properties**.

A definitionally essential property is an essential property in the sense that I have talked about up to now. However, a modally essential property is not necessarily an essential property in the sense that I have talked about up to now.

A property,  $P$ , is **modally essential** to an individual,  $x$ , just in case in every possible world in which  $x$  exists,  $x$  has  $P$ . Modally essential properties of a kind,  $K$  are just those properties had by a member,  $x$ , of  $K$  in every possible world in which  $x$  is a member of  $K$ .

Throughout much of the twentieth century, philosophers used the term ‘essential’ to mean modally essential.<sup>4</sup> But these days, generally speaking, philosophers tend to be more cautious. This is because Fine famously argued that not all modally essential properties are definitionally essential properties.

For example, Fine argued that the property of not being identical to the Eiffel Tower is modally essential to Socrates, even though it is not definitionally essential to Socrates. Presumably, Socrates’s real definition omits mention of the Eiffel Tower.

I believe that Fine would say that modally essential properties are properly called ‘essential’ in one sense of that term. Hence, he says, “[i]t is not my view that the

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<sup>4</sup>Notably, (Barcan Marcus, 1967), (Parsons, 1967), (Parsons, 1969), (Barcan Marcus, 1971), (Plantinga, 1974), and (Kripke, 1981). Their usage derives from (Quine, 1953, p. 155), (Quine, 1960, pp. 199–200), and (Quine, 1966, p. 174), whose usage in turn probably derives from Rudolf Carnap. See, e.g., (Carnap, 1934, p. 231). Because of the context in which Carnap introduces the term, I suspect he derived it from (Wittgenstein, 1922, 4.123). Carnap uses ‘wesentliche Eigenschaft’ and ‘interne Eigenschaft’ interchangeably. Wittgenstein uses the latter.

modal account fails to capture anything which might reasonably be called a concept of essence.” (Fine, 1994, p. 3) The conclusion of his argument, then, cannot be that the property of being non-identical to the Eiffel Tower fails to correspond to a reasonable or intuitive sense of the term ‘essential property’. There is a reasonable and intuitive sense in which even that property is essential. The point is that there’s also a reasonable and intuitive sense in which it is not. That other sense, Fine’s sense, is just the definitional sense.

Everyone I have read since then and who has bothered to comment on the subject agrees that this part of Fine’s argument is correct: not all modally essential properties are definitionally essential properties.<sup>5</sup>

Not all modally essential properties are definitionally essential. But Fine affirmed the converse: all definitionally essential properties are modally essential properties: “I accept that if an object essentially has a property then it is necessary that it has the property (or has the property if it exists).” (Fine, 1994, p. 4)

While this part of Fine’s view is probably, also, orthodoxy among proponents of the definitional conception of essence, it has achieved less than universal acceptance. Thus, Edward Zalta says that not all essential properties, in Fine’s sense, are modally essential properties:

[It] should be clear that since ordinary objects exist in every world, their ‘essential’ properties are *not* the ones they have in every world in which they exist, but rather ones they have in every world where they are concrete objects. (Zalta, 2006, p. 678).<sup>6</sup>

Zalta believes that all individuals necessarily exist. Thus, he believes that Socrates exists in every possible world. However, in some of these worlds, Socrates is not a concrete individual. For Zalta, even though all concrete individuals necessarily exist,

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<sup>5</sup>That includes the authors I call “modal reductionists.” See sections 2.1 and 2.2.

<sup>6</sup>See (Zalta, 2006, pp. 685–687) for the essence of abstract objects. My discussion does not touch on that aspect of Zalta’s view.

they do not necessarily exist as concrete. His heterodox view of essential properties relies on these claims.

Zalta supposes that Socrates is essentially human, in Fine's sense, and that necessarily, if something is human, it is concrete (Zalta, 2006, p. 681). Moreover, on Zalta's assumptions, Socrates is possibly not concrete. Thus, there is a possible world,  $w$ , in which Socrates exists but fails to be concrete. Thus, Socrates is not human in  $w$ . So, Socrates is essentially human but not human in  $w$ . Thus, since there are some worlds where Socrates exists and is not human, Zalta concludes, Socrates is essentially human but not necessarily such that if he exists, he is human. Thus, given Zalta's assumptions, not all definitionally essential properties are modally essential properties.

I think it is false that all individuals necessarily exist. But let us grant, for the sake of argument, this part of Zalta's modal metaphysics. I will show that even on this view if Socrates's humanity is definitionally essential, it is also modally essentially.

Suppose Socrates's being human is mentioned in his real definition in the actual world. And suppose that Socrates is contingently human. Then, there is some possible world where something is identical to Socrates but is not human. In that world, something is identical to Socrates even though it does not satisfy his actual world real definition. But on (CC.I), it follows if something is identical to Socrates and Socrates has a real definition in the actual world, then in all possible worlds where something is identical to Socrates, it satisfies Socrates's actual world real definition. Thus, Zalta's view together with (CC.I) implies a contradiction. Thus, the comprehensive condition entails the falsity of Zalta's heterodoxy.

We may generalize the argument as follows. Suppose that some property,  $P$ , is definitionally essential to  $x$ , but that it is possible that  $x$  exists and does not have  $P$ . Thus, there is a world,  $w$ , where  $x$  exists but does not have  $P$ . Since  $x$ 's real definition is the same in every world, and  $P$  is mentioned in  $x$ 's real definition,  $w$  is a world

where something is identical to  $x$  even though it does not meet  $x$ 's real definition. So by the comprehensive condition,  $x$  is not identical to  $x$  in  $w$ . Hence, by the necessity of identity,  $x$  is not identical to  $x$ . Hence, by *reductio*, it is false that it is possible that  $x$  exists but does not have  $P$ , given that  $x$  has  $P$  essentially. That conclusion is equivalent to the claim that  $P$  is modally essential to  $x$  if  $P$  is definitionally essential to  $x$ .

A similar argument shows that all definitionally essential properties of kinds are modally essential properties of kind. Suppose that some property,  $P$ , is definitionally essential to the kind  $K$  but that there is a possible world,  $w$ , where a member of  $K$ ,  $x$ , exists but does not have  $P$ . Since  $K$ 's real definition is the same in every world and  $P$  is mentioned in  $K$ 's real definition,  $w$  is a world where something is identical to a member of  $K$ , even though it does not meet  $K$ 's real definition. So by the comprehensive condition,  $x$  is a  $K$  in  $w$  and  $x$  is not a  $K$  in  $w$ . Since all contradictions are impossible, it follows that it is false that it is possible that  $x$  is a member of  $K$  but does not have  $P$ , given that  $K$ s have  $P$  essentially. That conclusion is equivalent to the claim that  $P$  is modally essential to  $K$  if  $P$  is definitionally essential to  $K$ .

I would summarize the upshot of these arguments as follows. Zalta's view, namely, that not all definitionally essential properties of an individual are modally essential properties, entails that the real definition of an individual cannot express facts about that individual's identity. For Zalta's view conflicts with the comprehensive condition, as these arguments show. But the comprehensive condition was motivated just by the thought that the real definition of an individual or kind should express facts about an individual's identity or the identity of members of that kind.

Hence, Zalta's view entails the denial of the claim that definitionally essential properties bear on an individual's identity. But this claim is false. I thus conclude that Zalta's heterodox view of the relation between definitionally essential and modally essential properties is false.

## 1.5 The Classical Definition of Humanity

Not all definitions meeting the comprehensive condition are real definitions. Gold is the chemical element with an atomic number of 79. But it is also the kind whose members are gold atoms. The singleton set of Socrates is the set whose sole member is Socrates. But it is also the individual that is identical to the singleton set of Socrates.

These alternative definitions of gold and the singleton set of Socrates are accurate. They pick out just that one kind and just that one individual in every possible world in which that kind has members and in every possible world in which that individual exists, respectively. Despite that, they are in some sense trivial. In this way, they are unlike real definitions. Real definitions are in some sense substantive.

In this and the remaining sections of this chapter, I describe and defend my second condition on real definition. That condition explicates how real definitions are substantive. In particular, it shows that real definitions are substantive in virtue of providing answers to questions about why that individual or kind is different from other things.

That there is such a condition is not original to me. The condition stems from a long tradition regarding the connection between real definition and explanation.

I believe that there is such a connection. Thus, I will first defend the tradition in this section. And in the next section, I provide a more exact formulation of its central claim.

My point in defending the tradition is not merely to show that some medieval philosophers said some good things once. I will add to the tradition. What I will add is a principle that allows us to say when we are justified in believing that a property is definitionally essential to an individual or kind. I describe this principle in section 1.7.

The tradition can best be understood by careful consideration of **the classical definition of humanity**. The classical definition of humanity says that humans are

rational animals.

The classical definition is a classical example of a real definition of the kind human. It makes a controversial claim about what the real definition of that kind is. Nevertheless, its proponents commonly appeal to it in describing the connection between real definition and explanation. I will consider the classical definition only insofar as it illustrates this connection, while setting aside the question of its truth.

The property of risibility is the property of having a capacity for humor. Proponents of the classical definition of humanity have often said that possession of the property of rationality, mentioned in the classical definition, explains possession of the property of risibility. The general idea is that human risibility is due to a capacity for combining thoughts in surprising (one might say funny) ways (Aquinas, 1882, Q3, A3, co.), (Barnes, 2003, pp. 11–12), (Oderberg, 2007, p. 49). The ability to combine thoughts in these ways is, the claim goes, due to one's rationality.

Consider two features of the property of risibility. Like rationality, it is alleged to be distinctive of humans. Humans are able to find things funny. But not everything is able to find things funny. Humans are also rational. But not everything is rational. So both risibility and rationality are distinctive of humans. They are properties had by humans, but they fail to be had by members of some other kinds. This claim is, I believe, uncontroversial.

The second feature of risibility is, however, more controversial. Proponents of the classical definition typically say that risibility is what is traditionally called a *proprium* or a proper accident (Oderberg, 2007, p. 47 & fn. 3). A proper accident is a modally essential property whose possession is due to the possession of a definitionally essential property.

I will explain why risibility is thought to be modally essential after I describe the general lesson of the classical definition. But before I do that, we should note that the connection between rationality and risibility is not the only explanatory connection

we may derive from the classical definition.

According to the classical definition, humans are animals. Animality is distinctive of humans. But another distinctive property of humans is mortality. Not everything is susceptible to death. For example, the non-living cannot die, there being in them no life to lose.

A natural thought is that animality, or at least the animality that is distinctive of humans, explains our natural susceptibility to death. The animality that is distinctive of humans brings with it the possession of cells that have a tendency to age, which in turn brings with it a certain life expectancy.

Animality and mortality are both properties of humans that distinguish members of that kind from members of some other kinds. Likewise, rationality and risibility are both properties of humans that distinguish members of that kind from members of some other kinds.

Assume the transitivity of explanation.<sup>7</sup> Assume also that the possession of animality explains the possession of mortality and that the possession of rationality explains the possession of risibility. Then, it follows that everything risibility explains rationality explains. And it follows that everything that mortality explains animality explains.

Given the transitivity of explanation, animality and rationality are more explanatory of what is distinctive of human's than is their mortality or their risibility. And presumably that is why one can reasonably infer that animality is mentioned in the real definition of humanity instead of mortality and that rationality is mentioned in the real definition of humanity instead of risibility.

Thus, the general lesson from the classical definition is this: real definitions men-

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<sup>7</sup>I assume the transitivity of explanation, rather than argue for it because its acceptance is standard and a detailed discussion would take me far afield from what I have to say here. For more discussion and references, see the end of section 5.1. One could easily recast the argument of this section by assuming the possession of animality rather than its non-possession explains the possession of mortality rather than its non-possession, etc.

tion the more explanatory differences of an individual or kind. In doing so, of course, they mention explanatory differences.

In describing the explanatory connection between rationality and risibility, I mentioned that the differences explained by possession of a definitionally essential property are typically said to be modally essential to an individual or kind. Thus, risibility is typically said to be modally essential to the kind human.

I will now defend this secondary lesson of the tradition. To do so will require me to say more about what I mean by ‘explanation’.

Explanations are at least potential answers to why-questions. Thus, to say that human animality explains human mortality is to give a potential answer to the question ‘why are humans mortal?’. That answer appeals to the fact that human are animals. It will say, ‘because they are animals’.

To say that human animality **fully explains** human mortality is to say that given that answer, there is in some sense nothing more one needs to say in order to answer that question.

When I say that there is ‘nothing’ more one needs to say in order to answer that question, I do not mean to rule out that one cannot expand upon the initial answer. Sometimes it helps to say a bit more about animality, as I did when I alluded to the fact that animals, at least of the relevant variety, have senescent cells. As I think about it, expanding on the answer in this way does not show the initial answer given was not a full explanation.

What would show that the initial answer given was not a full explanation would be to, in some way, add to that explanation what was not already there. For example, I believe it would add and not expand on the initial answer to say that there is an animal-hating evil demon making us mortal.

I will assume that the explanations illustrated by the classical definition are full explanations. Thus, one can expand upon rationality in order to explain risibility and

one can expand upon animality in order to explain mortality. But one cannot add to these things, if these are full explanations.

I think the full explanation for why water has the capacity to dissolve salt has to do with water's molecular structure.<sup>8</sup> That structure is the basis of the disposition to dissolve salt. Moreover, in my view, possession of a basis which fully explains the possession of a disposition metaphysically necessitates the having of that disposition.

Animality is related to mortality in the way a basis of a disposition is related to that disposition. 'Animality', as I understand it, refers, at least, to the having of a certain structure of cells. Those cells, being senescent, result in the mortality of organisms made up of them. Thus, animality is the basis of the disposition of mortality.

In section 1.4, I argued that all definitionally essential properties are modally essential properties. Suppose the possession of a modally essential property,  $P$ , metaphysically necessitates, the possession of another property  $Q$ . Thus, on this supposition, in every possible world where  $x$  has  $P$ ,  $x$  has  $Q$ . Thus, given that  $P$  is modally essential to  $x$ , it follows that  $x$  has  $Q$  in every possible world in which it exists. So  $Q$  is also a modally essential property.

In summary, if possession of  $Q$  is metaphysically necessitated by possession of a modally essential property,  $Q$  is a modally essential property.

Suppose animality is a definitionally essential property. Then, it is a modally essentially property. Now suppose animality fully explains mortality. Then, it is a basis of disposition which fully explains the possession of that disposition. Thus, it metaphysically necessitates the having of that disposition. Thus, mortality is modally essential to humans too. So mortality, on these assumption, is modally essential. So on these assumption, it is a 'proper accident', to use the traditional terminology.

Sometimes one disposition is the basis for another. The disposition to burn is the

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<sup>8</sup>For the issue of whether an appeal to natural laws prevents this from being a full explanation, see my discussion in section 2.4.

basis for the disposition to produce smoke.

Rationality is one disposition, risibility another. According to proponents of the classical definition, rationality is the basis of risibility. Possession of a basis which fully explains the possession of a disposition metaphysically necessitates the having that disposition. Thus, supposing rationality fully explains risibility, it follows from the classical definition that risibility is a modally essential property. So on these assumptions, it is a ‘proper accident’, to use the traditional terminology.

We see now that there is a set of plausible assumptions by which we may infer that the properties fully explained by a real definition are modally essential or that they are ‘proper accidents’.

Since I accept these assumptions, I think the traditional view is correct when it says that the properties fully explained by possession of a definitionally essential property are modally essential properties.

## 1.6 The Explanatory Condition

In the previous section, I explained the traditional connection between real definition and explanation via the classical definition. In this section, I apply the general lesson to what I believe to be genuine cases of real definition. I then formulate, more exactly, the explanatory condition on real definition.

Recall the general lesson from the classical definition: real definitions mention the more explanatory differences of an individual or kind. And a secondary lesson was that the differences explained are modally essential properties.

We can apply these lessons to the real definitions that are most plausibly taken to be genuine as follows.

First, consider our trivial definition of gold: *gold is the kind whose members are gold atoms*. One might expect the real definition of gold to mention properties of

gold that explain why it's different from other elements. For example, gold is not susceptible to corrosion, unlike iron.

The fact that gold has members that are gold atoms does not explain the possession of these properties. By contrast, facts about the structure of gold's nucleus do explain the possession of these properties.

Again, the explanation proceeding from gold's real definition is one proceeding from a basis to a disposition. The basis is the structure of gold atoms. The disposition is the tendency to undergo various chemical reactions or not to undergo such reactions. Hence, this is a case where the possession of a basis explains the possession of a disposition.

Now consider our trivial definition of the singleton set of Socrates: *the singleton set of Socrates is the individual that is identical to the singleton set of Socrates*. One might expect the real definition of this set to mention properties it has that explain why it's different from other things. For example, the singleton set of Socrates has members, unlike Socrates himself. But the fact that the singleton set is identical to itself does not explain this fact. By contrast, the fact that it has Socrates as a member explains this fact in virtue of the fact that its having Socrates as a member explains why it has some members.

In this case, the explanation proceeding from the real definition is not one proceeding from a basis to a disposition. Rather, it is one proceeding from the having of a property bearing on a particular individual to the having of a property bearing on some or another individual.

Because of this, we cannot infer by the principle that I gave in section 1.5 that the property fully explained by the real definition is modally essential. However, I believe the property explained is modally essential because 'the singleton set of Socrates has some member' is a logical consequence of the statement 'the singleton set of Socrates has Socrates as its sole member'.

Thus, I conclude that the general and secondary lessons given by the classical definition apply equally well to genuine cases of real definition. And for this reason, I conclude that that general and secondary lessons are true.

The fact that real definitions are explanatory distinguishes real definition from trivial definitions. But I believe that it also does more than this. In my view, it is also the key to seeing how we know and have some of our justified beliefs about definitionally essential properties.

More exactly, I believe that from an adequate statement of an explanatory condition on real definition, we infer a principle for forming *prima facie* justified beliefs about a property's being essential to an individual or a kind.<sup>9</sup>

However, to formulate that principle, it will be helpful to add some further precision about the properties whose possession is said to be explained.

Some properties differentiate individuals,  $x$  and  $y$ , or differentiate kinds,  $K_1$  and  $K_2$ . Say that a property,  $P$ , differentiates the individuals  $x$  and  $y$  in a possible world,  $w$ , just in case in  $w$ , both  $x$  and  $y$  exists in  $w$  but  $x$  is  $P$  and  $y$  is not  $P$ .

Likewise, a property,  $P$ , differentiates the kinds  $K_1$  and  $K_2$  in a possible world,  $w$ , just in case in  $w$ , both  $K_1$  and  $K_2$  have some members in  $w$  but all members of  $K_1$  are  $P$  and not all members of  $K_2$  are  $P$ .

When it is metaphysically possible that a modally essential property,  $P$ , of  $x$  or of a kind,  $K_1$ , differentiates  $x$  or  $K_1$  from some other individual or kind, then I call that differentiating, modally essential property a **modally essential difference** of  $x$  or  $K_1$ , respectively.<sup>10</sup>

My view is that generally speaking, the real definition of an individual or kind fully explains the modally essential differences of that individual or that kind. We

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<sup>9</sup>A *prima facie* justified belief is a belief that is justified assuming one has no defeaters for that belief.

<sup>10</sup>Note that  $P$  may be a modally essential difference of  $x$  even if  $x$  is the only thing that exists. As long as it is possible for  $x$  to be  $P$  while something else is not  $P$ , it is still a modally essential difference of  $x$  on the above definition. Thanks to Michael Gorman for pointing out the need for this qualification.

can state this more exactly as follows:

(E.I) It is metaphysically necessary that for all individuals,  $x$ , and modally essential differences of individuals,  $P$ ,  $x$ 's satisfying  $x$ 's real definition, generally, fully explains why  $x$  has  $P$ .

(E.K) It is metaphysically necessary that for all kinds,  $K$ , and modally essential differences of kinds,  $P$ , a member of  $K$ 's satisfying  $K$ 's real definition, generally, fully explains why  $x$  has  $P$ .

The conjunction of (E.I) and (E.K) is what I call **the explanatory condition** on real definition.

In stating the explanatory condition, I made use of the term 'generally'. Here is why I made use of that term.

It is obvious that the property of being such that the law of excluded middle is true is had by all gold atoms. It is also had by the singleton set of Socrates.

However, possession of this property is, I believe, in not full explained by possession of the definitionally essential properties of gold nor of the singleton set of Socrates. For it is partially explained by some facts about how logical consequence works. And these facts, I believe, would add to an explanation appealing to the definitionally essential properties of gold or of the singleton set of Socrates.

The property of being such that the law of excluded middle is true is, I believe, not a modally essential difference. Everything has this property. Or more exactly, in every possible world, everything has this property.

Now consider the following property: having something as a member and being such that the law of excluded middle is true. For the same reason, I believe that possession of this property is not fully explained by possession of the definitionally essential properties of the singleton set of Socrates. For it is partially explained by some facts about how logical consequence works. And these facts, I believe, would add

to an explanation appealing to the definitionally essential properties of the singleton set of Socrates.

Unlike the first property I described, however, the property of having something as a member and being such that the law of excluded middle is true is a modally essential difference. It is a modally essential difference of the singleton set of Socrates.

Thus, we cannot say that all modally essential differences are fully explained by definitionally essential properties.

Consider, also, the following. The definitionally essential properties of an individual or kind are themselves modally essential differences of that individual or kind. I deny that there are any true explanations of the form ' $p$  because  $p$ '. Hence, I deny that an individual or kind's possession of its definitionally essential properties explains itself.

However, I think we can conclude that a definitionally essential property explains a modally essential difference, so long as a reason for thinking otherwise is lacking.

We should not conclude that the property of having something as a member and being such that the law of excluded middle is true is definitionally essential to the singleton set of Socrates. This is because we have a reason to think the definitionally essential properties of the singleton set of Socrates do not fully explain this property's possession. We have reason to think something else explains, that is, some facts about logical consequence.

Similarly, we should not conclude that the having the singleton set of Socrates's definitionally essential properties is fully explained by the having of the singleton set of Socrates's definitionally essential properties. This is because we have a reason to think the definitionally essential properties of things do not explain themselves. We have reason to think there are no true explanations of the form ' $p$  because  $p$ '.

Thus, with the appropriate qualification in my mind, I think we can conclude that the explanatory condition is true.

## 1.7 Explanation and the Epistemology of Essence

In the two previous sections, I articulated and defended a traditional view about the connection between real definition and explanation. In this section, I add to that tradition.

In particular, I will argue that from the explanatory condition, we may infer the following principles on the acquisition of justified beliefs about definitionally essential properties:

- (EJ.I) If a property,  $P$ , is a modally essential difference of an individual,  $x$ , then absent some defeater, we are justified in believing that  $x$ 's having  $P$  is explained by  $x$ 's satisfying  $x$ 's real definition.
- (EJ.K) If a property,  $P$ , is a modally essential difference of a kind,  $K$ , then absent some defeater, we are justified in believing the members of  $K$ 's having  $P$  is explained by those member's satisfying the real definition of  $K$ .

To illustrate, suppose we are justified in believing that the property of having some members is a modally essential difference of the singleton set of Socrates. Then given (EJ.I), absent some defeater, we are justified in belief this is explained by the singleton set of Socrates's satisfying its real definition.

Similarly, suppose we are justified in believing that the property of being malleable is a modally essential difference of the kind gold atom. Then, given (EJ.K), absent some defeater, we are justified in believing this is explained by gold atom's satisfying their kind's real definition.

Suppose (EJ.I) is false. Then, there is a modally essential difference,  $P$ , of some individual,  $x$ , that absent some defeater we are not justified in believing to be explained by that individual satisfying its real definition. If that were the case, we could then conclude that  $x$ 's satisfying its real definition does not generally, fully explain why  $x$  has  $P$ . Thus, (E.I) would be false. Thus, if (EJ.I) is false, (E.I) is false. And

by contraposition, if (E.I) is true, (EJ.I) is true. Since I have argued that (E.I) is true, it follows that (EJ.I) is true. Thus, I conclude that (EJ.I) is true.

Suppose (EJ.K) is false. Then, there is a modally essential difference,  $P$  of some individual,  $K$ , that absent some defeater we are not justified in believing to be explained by a member's satisfying  $K$ 's real definition. If that were the case, we could then conclude that a member of  $K$ 's satisfying its kind's real definition does not generally, fully explain why it has  $P$ . Thus, (E.K) would be false. Thus, if (EJ.K) is false, (E.K) is false. And by contraposition, if (E.K) is true, (EJ.K) is true. Since I have argued that (E.K) is true, it follows that (EJ.K) is true. Thus, I conclude that (EJ.K) is true.

It is sometimes said that the proper accidents of an individual or kind 'flow from' its essence. For those who find that metaphor helpful, you could state (EJ.I) and (EJ.K) in this way: (EJ.I) and (EJ.K) give sufficient conditions for having *prima facie* justified beliefs about which are the properties thought to flow from a thing's real definition. (EJ.I) and (EJ.K) say those properties are just the modally essential differences of the individual or kind, respectively.

I believe that we can sometimes infer, by means of inference to the best explanation, what it is from which possession of these properties flows. In my view, this use of inference to the best explanation is one of the most important ways we acquire justified beliefs about what the real definition of a kind or an individual is.

As noted in section 1.1, Many proponents of the definitional conception of essence agree that gold is defined as the chemical element with an atomic number of 79.

Suppose you think, like I do, that this is gold's real definition. Still, it's clear that we haven't always believed that this is gold's real definition. We had to discover this fact.<sup>11</sup>

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<sup>11</sup>I am referring to the kind gold atoms, not the kind (if it is a kind) stuff composed of gold. Thus, I am saying we had to discover this fact about gold atoms. People knew about gold atoms prior to the discovery of the structure of the atomic nucleus. See the table for Leopold Gmelin's 1843 system of triads in (Scerri, 2020, p. 49, fig. 2.3).

It was only by way of the empirical sciences that we could discover that gold has an atomic number of 79. Hence, everyone who thinks this is genuinely the real definition of the kind gold atom must agree that the empirical sciences can, somehow, allow us to discover a kind's real definition.

No one can just see the real definition of a gold atom. Look through a microscope. You won't see it. Scour the heavens. You won't see it. Search the depths of the earth, the farthest limits of the sea. Look anywhere you like. You will never find it.

Nevertheless, the empirical sciences allowed us to discover the real definition of the kind gold atom. But they did not do so by directly observing it. So they must have done it some other way.

My view is that the empirical sciences allowed us to discover the essence of gold by considering what best explains its distinctive dispositions. What best explained the distinctive dispositions of gold is its atomic number. Given that these dispositions are modally essential, it follows from (EJ.K) that they are explained by the member of the kind gold atom's satisfying their kind's real definition.

The empirical sciences *allowed us* to discover the essence of gold atoms. That is because those sciences acquired empirical evidence about the kinds of dispositions gold atoms have. Moreover, they tested various claims about what the basis of those dispositions are.

In my view, a student of science would, therefore, be justified in concluding, for example, that the real definition of gold mentions its having an atomic number of 79. The fact that science has such evidence, however, should not lead us to suppose that scientists will *say* that the essence of gold is its having an atomic number of 79.

And in fact, I think we should expect scientists not to say what the essence of gold is. For I think that the concept of essence is a philosophical concept, not a scientific one. Nevertheless, it is a philosophical concept whose application we often discover by reflecting on scientific evidence.

Recall that Fine said, that facts about real definition are facts about the metaphysics of identity (Fine, 1994, p. 1). It follows from what I've said that some facts about the metaphysics of identity can only be discovered by empirical investigation.

No amount of purely armchair reasoning could have revealed to us gold's essence. And what holds in this case may well hold in others. We cannot assume that all essences may be discovered from the armchair.

Moreover, there is nothing strange in how science discovers essences on this account. We do not need a special essence-detecting faculty to figure out gold's essence. The facts in question were discovered by means of ordinary scientific inquiry. Thus, certain truths in the metaphysics of identity can be established through reflection on ordinary scientific inquiry.

Some might point out that not all justified beliefs about real definitions are acquired in this way. For example, some might say that our justified belief that the real definition of the singleton set of Socrates is *the singleton set of Socrates is the set whose sole member is Socrates* is not justified by way of inference to the best explanation. Instead, some might say that it is perhaps an analytic truth.<sup>12</sup>

Perhaps that is true. My claim is not we must say that all our justified beliefs about real definitions are had by way of inference to the best explanation. My claim is only that some are and that this fact shows that some truths about the metaphysics of identity are known by way of ordinary scientific inquiry.

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<sup>12</sup>That is, an epistemologically analytic truth. This seems to be (Lowe, 2008, p. 37)'s view. For epistemological analyticity, see the papers in (Boghossian and Williamson, 2020).

# Chapter 2

## The Reduction of Essence to Modality

### 2.1 Modal Reductionism

On the **modal conception of essence**, ‘essential properties’ designates modally essential properties, or it designates properties had by an individual or kind in every possible world. Most often, proponents of the modal conception of essence say that ‘essential properties’ designates modally essential properties.

As I noted in section 1.4, many philosophers in the twentieth century endorsed the modal conception of essence. However, as far as I can tell, it is unanimously agreed upon that Fine showed that not all modally essential properties are essential properties.

An essential property in Fine’s sense and in the sense that I use it, is a definitionally essential property. Although we can all agree that definitionally essential properties are not the same as modally essential properties, some have said that definitionally essential properties can be analyzed as or reduced to modally essential

properties. I call this view **modal reductionism**.<sup>1</sup>

Most modal reductionist begin with the modal conception of essence. They then add some further qualification intended to avoid the arguments of Fine. For example, recall that Fine argued that the property of being non-identical to the Eiffel Tower is not essential to Socrates, even though it is modally essential to Socrates. Modal reductionists agree with Fine that this property is not essential to Socrates. They will say that this is because it lacks some feature specific to certain types of modally essential properties.

Thus, the basic structure of the modal reductionist response is to say that some but not all modally essential properties are the definitionally essential properties and that these are the definitionally essential properties in virtue of having a special feature that the other modally essential properties lack.

I will assume that an analysis or reduction of definitionally essential properties cannot be circular. Thus, the special feature picked out by modal reductionists is not a feature that can only be understood in terms of essence or in terms of real definition.

Proponents of modal reductionism grant this. Thus, many contrast their views with an alternative that they call primitivism about essence. Most attribute this view to Fine.

Thus, Samuel Cowling says,

Before turning to Fine’s challenge for the modal view, it will be helpful to introduce Fine’s preferred view: primitivism. . . .

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<sup>1</sup>Below, I discuss the views of (Cowling, 2013), (Wildman, 2013), (Denby, 2014), (De Melo, 2019), and (Bovey, 2021). But see also (Zalta, 2006), (Brogaard and Salerno, 2007), and (Correia, 2007). I find the response to the latter authors in (Morvarid, 2019) compelling. For responses to the former authors, see (Skiles, 2015) and (Zylstra, 2019b). But neither Skiles nor Zylstra give a counterexample to the sufficiency of (SMA) and (IMA) (Skiles’s argument gives a counterexample to the sufficiency of Wildman’s account of essential relations).

(Livingstone-Banks, 2017) and (De Rizzo, 2022) also defend a kind of modal reductionism. But these authors give reductions of propositions and sentences that are said to be ‘essential’, rather than of essential properties.

For the primitivist, the essence of an individual is its ‘real definition’ . . .  
. [P]rimitivism about essence precludes any reductive account (Cowling,  
2013, p. 250)

Likewise, David Denby says, the following: “Strictly, he [Fine] proposes explaining essence in terms of ‘real definitions’, but a real definition is characterized a la Aristotle, only as ‘the formula of essence’, which is tantamount to taking essence as primitive.” (Denby, 2014, fn. 5).

Thus, **primitivism** about essence is the view that essence or real definition cannot be analyzed or reduced to anything. For as Cowling says, it precludes *any* reductive account of essence.

Both Cowling and Denby see primitivism as related to real definition. And they are right to do so. Primitivism about essence is related to real definition in the following way.

Suppose essence can be analyzed as or reduced to real definition. Still, it may be that real definition cannot be analyzed or reduced to anything else. Nevertheless, I think that Cowling and Denby would agree that primitivism follows from these suppositions. The account supposed would be bad for the modal reductionist. Indeed, it looks bad for any reductive account of essence. (I am not endorsing this account; I am using it as an illustration.)

Denby does not say what he means by “explaining essence in terms of real definitions.” But he says that when Fine does so, this is “tantamount to taking essence as primitive.” As I will point out in a moment, this is simply mistaken as a claim about Fine’s views.

More importantly, however, is the following. Saying that the essential properties are the definitionally essential properties is not tantamount to taking essence as primitive. Rather, it is tantamount to discussing the subject matter of Fine’s paper (see section 1.4).

Because the modal reductionist is giving a reduction or analysis of Fine’s sense of ‘essential property’, that is, the definitional sense, they must also provide a reduction or analysis of real definition. That is, the modal reductionist can grant that essence is related to real definition but propose that we can analyze or reduce real definition itself. At the conclusion of section 2.2, I will show that this is easily done, granted Denby’s central claim (and the claims of Cowling and Wildman).

Despite the fact that both Cowling and Denby attribute primitivism to Fine, such an attribution is demonstrably false. So far as I can tell, Fine has never endorsed primitivism about essence.

Indeed, since the time of Cowling and Denby’s papers, Fine has explicitly stated that his views are “perfectly compatible with [the notion of essence] not actually being a primitive.” (Fine, 2020c, p. 465)<sup>2</sup>

Fine’s views, however, are inconsistent with modal reductionism, at least, given that there are no circular reductions. This is because he believes that metaphysical modality is reducible to essence (see chapter 4). And it would be circular to say that both metaphysical modality is reducible to essence and essence is reducible to metaphysical modality.

Thus, whether by way of avoiding Fine’s actual views or by way of avoiding primitivism, the modal reductionist must deny that the special feature of the modally essential properties they have in mind is a feature that can only be understood in terms of essence or real definition.

In this chapter I argue against modal reductionism. In particular, I show that two versions of this proposal fail to provide sufficient conditions on a property’s being essential in the definitional sense. So these attempts fail to provide an analysis or reduction of the definitional conception of essence.

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<sup>2</sup>He said this in response to (Mackie, 2020, p. 250, fn. 10), who writes, “I have not been able to find, in Fine’s own writing, an explicit claim that *essence* is to be taken as a primitive notion.” Needless to say, we should also find doubtful Denby’s inference from ‘Aristotle thinks *p*’ to ‘Fine thinks *p*’, even if he’s right about the premise of that inference.

My conclusion is a restricted one. I do not claim that every variation of modal reductionism is false. Nevertheless, one could take the argument of this chapter as providing evidence for such a claim. For example, perhaps a track-record of failed analyses or reductions of essence to modality provides sufficient evidence that the notion is neither analyzable nor reducible in that way . Although I do not claim to have established such a track-record, the argument of this chapter could be taken as contributing to its establishment.

## 2.2 (SMA) and (IMA)

Samuel Cowling and Nathan Wildman have independently proposed that essential properties are modally essential properties which are also sparse properties. Thus, Cowling says that “the nature of an individual is the intersection of an individual’s essential properties — as understood via the modal view — and sparse properties.” (Cowling, 2013, p. 258). And Wildman says, “once we introduce a sparseness condition [to the modal conception of essence], the resulting sparse modalism appears immune to Fine’s objection.” (Wildman, 2013, p. 781).

If the proposals of Cowling and Wildman are true, then they imply the following equivalence:

(SMA.I) A property,  $P$ , is essential to an individual,  $x$ , just in case (i) it is metaphysically necessary that if  $x$  exists,  $x$  has  $P$ , and (ii)  $P$  is a sparse property.

Recall that the paradigmatic examples of definitionally essential properties are the definitionally essential properties of kinds. For example, a definitionally essential property of the kind gold is the property of having an atomic number of 79. And according to the classical definition of humanity, a definitionally essential property of the kind human is the property of being an animal.

Cowling and Wildman's account is incomplete because it merely provides an analysis or reduction of the essential properties of individuals. But although Cowling and Wildman do not discuss how their account applies to kinds, it is easy to see how it could do so:

(SMA.K) A property,  $P$ , is essential to a kind,  $K$ , just in case (i) it is metaphysically necessary that for all individuals,  $x$ , if  $x$  is a member of  $K$ ,  $x$  has  $P$ , and (ii)  $P$  is a sparse property.

I will refer to the conjunction of (SMA.I) and (SMA.K) as (SMA).

The term **sparse property** was introduced by David Lewis, who explained it as follows:

Sharing of [the sparse 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, 1986, pp. 59–60)<sup>3</sup>

Lewis also said that some properties are more disjunctive or more extrinsic than others. Thus, sparse properties come on a scale of sparseness, and where a property falls on that scale has to do with how disjunctive and how extrinsic it is.

For example, the color properties, such as being green, are, according to Lewis, somewhat less natural, since “they can be reached by not-too-complicated chains of definability from the perfectly natural properties.” (Lewis, 1986, p. 61) The property of being grue (blue before being observed, green after) is less natural still, since derivative of green and blue.

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<sup>3</sup>See also (Lewis, 1983).

Those properties which do the best on the scale of sparseness Lewis calls the perfectly natural properties. Among such perfectly natural properties, he said, are fundamental properties of physics such as mass, charge, and so forth.

Although Lewis coined the term ‘sparse property’, Cowling and Wildman agree that this term cannot, in their accounts, refer solely to Lewis’s perfectly natural properties. And this is plausible given the examples of real definition we’ve seen. For example, having an atomic number of 79 is not a perfectly natural property, since it has to do with non-fundamental features of atoms (namely, the number of protons in their nuclei). Likewise, being an animal plausibly also has to do with the non-fundamental features of its bearers, such as the kinds of cells of which they are composed. Hence, being an animal is not a perfectly natural property either.

Cowling and Wildman are aware of this problem, and so they adopt a modified account of sparse properties.<sup>4</sup> Both say that sparse properties are properties mentioned in any science, be that fundamental physics or something else (Cowling, 2013, p. 258), (Wildman, 2013, p. 766). Thus, for example, the properties of having an atomic number of 79 and being an animal count as sparse because they are mentioned in the sciences (chemistry and biology). But the property of being distinct from the Eiffel Tower is not sparse because the Eiffel Tower is not mentioned in a science.

Admittedly, Cowling and Wildman do not say exactly what sciences pick out the sparse properties. Some may say, for example, that history is a science (“it’s a Wissenschaft”), and the Eiffel Tower’s construction, being a part of history, is therefore mentioned in a science. But I take it that Cowling and Wildman mean something like the natural sciences. Or perhaps they mean something like the natural sciences and those sciences that are appropriately related to the natural sciences, such as mathematics.<sup>5</sup>

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<sup>4</sup>They refer to (Schaffer, 2004) for this account.

<sup>5</sup>In saying this, I follow (Schaffer, 2004, p. 92), who explains, “[o]n what I label the *scientific* conception of the sparse properties, the sparse properties are drawn from all levels of nature — they are those invoked in the scientific understanding of the world.” Note the assumption that

David Denby proposes a variety of modal reductionism distinct from that of Cowl-  
ing and Wildman. He thinks the modal reductionist must add the qualification that  
essential properties are also intrinsic properties: “Essential properties are intrinsic.  
Recognizing this saves the modal analysis of essence from Fine-style objections.”  
(Denby, 2014, p. 108)

Denby’s proposal implies the following:

(IMA.I) A property,  $P$ , is essential to an individual,  $x$ , just in case (i) it is metaphysically  
necessary that if  $x$  exists,  $x$  has  $P$ , and (ii)  $P$  is an intrinsic property.

Similarly, for kinds, we have the following:

(IMA.K) A property,  $P$ , is essential to a kind,  $K$ , just in case (i) it is metaphysically  
necessary that for all individuals,  $x$ , if  $x$  is a member of  $K$ ,  $x$  has  $P$ , and (ii)  $P$   
is an intrinsic property.

I will refer to the conjunction of (IMA.I) and (IMA.K) as (IMA).

While accounts of intrinsic properties are controversial, there are several rules  
of thumb for discerning the intrinsicity of a property (Marshall and Weatherson,  
2018). Hence, for example, properties that one has wholly in virtue of one’s parts are  
usually considered intrinsic.

Thus, color properties are sometimes said to be intrinsic to composite objects  
because the color of those things has to do with the color of their parts. Likewise,  
properties of size are sometimes said to be intrinsic to composite objects because the  
size of those things has to do with the size of their parts.

By contrast, being the tallest person in the room is not a property had wholly in  
virtue of my parts. Rather, it also has to do with who else is in the room.

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our “scientific understanding” is about all levels of nature (and so presumably not all levels of  
everything).

Thus, the property of having an atomic number of 79 counts as intrinsic to gold because having an atomic number of 79 is due to having a certain structure in one's nucleus. Perhaps, also, the property of being an animal counts as intrinsic because one's being an animal is the result of one's being made of certain kinds of cells.

By contrast, the property of being distinct from the Eiffel Tower is not intrinsic, since the Eiffel Tower shares none of its parts with Socrates.

Thus, both varieties of modal reductionism are able to avoid at least this counterexample of Fine's, while also remaining consistent with the claim that the chemist's definition of gold and the classical definition of humanity are real definitions.

(SMA) and (IMA) are stated as reductions of the notion of an essential property, but it is clear that they can also reduce the notion of real definition.

Recall that I assume that the essential properties of an individual or kind are properties mentioned in that individual or kind's real definition. Proponents of (SMA) and (IMA) can then say that the real definition of an individual,  $x$ , is a proposition that ascribes to  $x$  all and only the properties which are essential to  $x$ . Likewise, the real definition of a kind,  $K$ , is a proposition that ascribes to  $K$  all and only the properties which are essential to  $K$ .<sup>6</sup>

In this section, I have shown that (SMA) and (IMA) are consistent with two examples of the real definition of kinds. I have also shown that they avoid Fine's argument appealing to the property of being non-identical to the Eiffel Tower. However, I have not shown that (SMA) and (IMA) avoid all of Fine's argument.

Indeed, as I will explain in section 2.5, Cowling, Wildman, and Denby believe their views are inconsistent with the conclusion of one of Fine's arguments.

My goal is not to assess whether Fine's arguments show (SMA) and (IMA) to be false. My goal is to provide my own argument against the sufficiency of (SMA) and (IMA). I will, however, return to this issue in section 2.5 because some proponents of

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<sup>6</sup>This strategy is due to (Gorman, 2005, p. 288).

(SMA) and (IMA) have developed more specific accounts of sparsity and intrinsicity in order to render (SMA) and (IMA) consistent with Fine's claims. I will then show that the argument of section 2.4 also applies on the assumption of these accounts.

## 2.3 A Property of Gold Atoms

In this section, I describe the property that will feature in my argument against (SMA) and (IMA). I then argue that it is a modally essential property of the kind gold and that is also sparse and intrinsic. I describe, then, a common assumption which shows how my argument applies not just to the kind gold but also to an individual gold atom.

Gold atoms have their masses contingently. They could be heavier or lighter, for example, by gaining or losing a few neutrons. But consider the property of having a mass in the range  $R_G$ . ' $R_G$ ' denotes the range of masses which it is metaphysically necessary that golds atoms have, if they are gold atoms.

The property of having some mass in the range  $R_G$  is modally essential to the kind gold atom. Suppose  $x$  is a gold atom in some possible world,  $w$ . Then,  $x$  has a mass,  $m$ , in  $w$ . But if  $m$  is not in the range  $R_G$  in  $w$ ,  $x$  is not a gold atom in  $w$ , given the definition above: contradiction. So it is metaphysically impossible for  $x$  to be a gold atom and fail to have a mass in the range  $R_G$ . Thus, having some mass in the range  $R_G$  is modally essential to gold atoms.

The property of having some mass in the range  $R_G$  is, I think, a sparse property, in Cowling and Wildman's sense of 'sparse property'. That is, it is a property that is mentioned in the natural sciences.

It is clear that when a scientific theory contains a variable for a quantity, the values of that quantity are, in some sense, mentioned by or included in that theory. So for example, even though Newton never plugged in the value of 54,673kg for one

of the variables in the numerator of his law of universal gravitation, that is not to say that having a mass of 54,673kg is not mentioned in Newton's theory. It is a possibility accounted for by the presence of a variable which ranges over that value.

Now the masses specified in the range of  $R_G$  are values of mass variables in our current physical theories. Moreover, our scientific theories include statements of the form ' $x$  can have some mass,  $m$ , in some range  $R$ '. Therefore, the statement 'this gold atom has some mass in the range of  $R_G$ ' is mentioned in our physical theories. And so it is a sparse property, in the sense of 'sparse property' used by Cowling and Wildman.

Finally, having a mass in the range  $R_G$  is an intrinsic property. It is a property that gold atoms have wholly in virtue of their parts. The reason a gold atom falls in that range is because it has some mass in that range. It has some mass in that range because of the mass of its parts. So it is an intrinsic property of gold atoms.

Some may be concerned that having a mass in the range of  $R_G$  is a disjunctive property. For to have this property is just to have a mass of  $m_1$ , or a mass of  $m_2$ , or a mass of  $m_3$ , and so on. On the assumption that no intrinsic properties are disjunctive, it follows that this property is not intrinsic.

But the assumption that no intrinsic properties are disjunctive properties is false. Some intrinsic properties are disjunctive. After all, consider the property of being over six feet tall. This property is intrinsic, even though it is disjunctive. It consists of being either six foot one, six foot two, and so on. It is a property I have wholly in virtue of my parts. Thus, some intrinsic properties are disjunctive. And so the fact that having a mass in the range of  $R_G$  is a disjunctive property is consistent with its being an intrinsic property.

Some may be concerned that having a mass in the range  $R_G$  is modal, since I specified it modally: it is the property of having some in a range of masses which it is metaphysically necessary that golds atoms have, if they are gold atoms.

A modal property, in this sense, is a property which somehow includes modality, for example, the property of being possibly five foot five or the property of being necessarily human. In this sense, not all properties whose possession is modally essential are modal properties. After all, if that were the case, the objector's argument would imply that, on Denby's account, no individual or kind has essential properties.

I think it is false, however, that just because a property is specified modally that it is, therefore, modal. Consider for example the property of having a mass in the range 27g, 28g, or 29g. This is not a modal property. But it could be specified modally. For example, it is a range of masses I am typically able to fit in a scoop of protein powder. But the fact that I can specify the property in this way does not make it modal. Likewise, I think that merely because the property of having a mass in the range  $R_G$  is specified modally, this does not make it modal.

(SMA) implies that every modally essential property of an individual or kind which is also sparse is a definitionally essential property. Likewise, (IMA) implies that every modally essential property of an individual or kind which is also intrinsic is a definitionally essential property.

Since I have shown that having a mass in the range of  $R_G$  is a modally essential property of the kind gold atom and that this is both a sparse and an intrinsic property, it follows that if (SMA) and (IMA) are true, this is an essential property of the kind gold.

Let us consider, now, an individual gold atom, call it 'Gilbert'. We may, given these arguments, conclude that having a mass in the range of  $R_G$  is a modally essential property of Gilbert given the following assumption: the typical members of a kind are members of that kind in every possible world in which they exist. That is, typical members of a kind,  $K$ , are such that it is metaphysically necessary that if they exist, they are members of  $K$ . Since we've shown that it is metaphysically necessary that all members of  $K$  have the property of having a mass in the range  $R_G$ , it follows that

Gilbert, a typical member of the kind gold atom, has this property in every possible world in which he exists. Thus, this property is modally essential to Gilbert.

Moreover, I think it is clear that given my arguments that this property is sparse and intrinsic to the kind gold, it follows that having a mass in the range  $R_G$  is sparse and intrinsic to the individual Gilbert.

Thus, on these additional assumptions, it follows that having a mass in the range  $R_G$  is essential to Gilbert, given (SMA) and (IMA).

## 2.4 Against (SMA) and (IMA)

I have shown that if (SMA) and (IMA) are true, having a mass in the range of  $R_G$  is a definitionally essential property of the kind gold. I now argue, however, that this is not a definitionally essential property of the kind gold atom.

Consider the classical definition of humanity: *humans are rational animals*. At one point, some thought the classical definition was the real definition of humanity. But at no point do I think anyone had reason to conclude that the following was the real definition of humanity: *humans are rational animals that are also naturally mortal*.

In section 1.5, I offered the following as an explanation for why this is the case. Real definitions mention the more explanatory differences of individual and kinds they define. I called this the “general lesson” from the classical definition.

The lesson implies that a less explanatory difference will not be mentioned in a real definition. Thus, the definition *humans are rational animals that are also naturally mortal* is not the real definition of humanity, assuming that humanity explains natural mortality.

The latter definition is a redundant definition supposing that animality explains natural mortality and supposing then the transitivity of explanation. On these as-

sumptions, everything that natural mortality explains is also explained by animality.

More exactly, say that a **redundant definition** is a definition which mentions a property whose possession explains only the things that the possession of some other properties in the definition explain. Thus, the definition humans are rational animals that are also naturally mortal is a redundant definition on the assumptions above.

Real definitions are not redundant definitions. Hence, some of the properties that make a definition redundant are not mentioned in a real definition.

As I said in section 2.2, the modal reductionist can say that real definitions are mere summaries of a thing's essential properties. Hence, the modal reductionist may say that to assume that real definitions satisfy the general lesson is, perhaps, question begging (although bear in mind that I have not yet shown that modal reductionists must say some real definitions do not satisfy the general lesson).

However, I have not *assumed* that real definitions satisfied the general lesson. Rather, I have *argued* for this claim. I have said that this fact shows why *humans are rational animals that are also naturally mortal* is not a plausible real definition of humanity. So while I did make the assumption that *humans are rational animals that are also naturally mortal* is not the real definition of humanity, this is not an assumption the modal reductionist must reject. So again, I have not begged the question against the modal reductionist (even granting that modal reductionists must say some real definitions do not satisfy the general lesson).

I now argue that mentioning in the real definition of gold the property of having a mass in the range  $R_G$  results in a redundant definition, given that having an atomic number of 79 is mentioned in gold's real definition. Hence, the property of having a mass in the range  $R_G$  cannot be mentioned in the real definition of gold since it is true that having an atomic number of 79 is mentioned in gold's real definition. It follows that having a mass in the range  $R_G$  is not a definitionally essential property of the kind gold atom.

My argument is then just that the possession of the property of having an atomic number of 79 explains why members of the kind gold have a mass in the range  $R_G$ . Thus, everything that possession of this property explains is already explained by gold's having an atomic number of 79.

The range of masses an element may have is explained by the fact that the masses in that range are possible masses which an atom may have while retaining the same number of protons in its nucleus, the possession of these protons being essential to the element.

Consider an example. A proton is a composite thing. It is composed of two up quarks and one down quark. The mass of a proton is determined by the masses of its constituent quarks. A sufficient increase in the mass of a proton's quarks, and hence the mass of the element as a whole, would destroy those protons.

This point is illustrated by Geraint F. Lewis and Luke A. Barnes as follows:

The result [of increasing the mass of the up quark by a factor of six] is that the proton falls apart. In a reversal of what we see in our universe, the proton, including protons buried in the apparent safety of the atomic nucleus, decay into neutrons, positrons and neutrinos. . . no atoms, no chemical reactions. Just endless, featureless space filled with inert, boring neutrons. (Lewis and Barnes, 2016, p. 51)

Of course, the mass of an atom can vary in other ways too. For example, it can gain or lose a neutron. But for it to survive the loss or addition of a neutron, the nucleus must be stable enough to maintain the same number of protons. Likewise, increasing the mass of the neutrons will have bearing on the mass of the proton, since neutrons are also composed of up quarks and down quarks.

Finally, sufficient changes in the mass of electrons results in the destruction of the protons, since an increase in electron mass results in an increase in electromagnetic

attraction between the protons and electrons, in accordance with Coulomb's law. A sufficient increase in the strength of electromagnetic attraction from the electrons would rip the protons out of the nucleus.

Thus, whatever changes we make to increase or decrease the mass of an element will have some bearing on the protons in its nucleus. And hence the fact that a member of some kind of element can undergo one or another of these changes while remaining a member of that kind is explained by the fact that it can undergo these changes while retaining the same number of protons in its nucleus. And so the reason why an element, such as gold, has a mass within a certain permissible range is because that range allows it to retain its same number of protons in its nucleus.<sup>7</sup>

Now these examples appeal to natural laws in their explanation of the relation between changes in the mass of gold atoms and retention of nucleic protons. Some may think that because of this, the explanatory connection is contingent.

Alternatively, some may think that the explanation I have given is not a full explanation from gold's real definition because appealing to natural laws adds to and does not merely expand upon an explanation appealing to the property of having an atomic number of 79.

Note that this objector assumes that gold atoms can exist even when our current laws of nature (or close approximations of them) do not obtain. For example, the objector supposes that in some worlds, the nucleus of a gold atom retains its protons despite a substantial increase in the mass of the surrounding electrons because the laws describing the electromagnetic force are radically different in those worlds.

I, however, think that in every possible world in which gold atoms exist, our current laws of nature (or close approximations of them) also obtain. Because of

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<sup>7</sup>Some may think it metaphysically possible for a gold atom to have any mass, given the appropriate changes in the laws of nature. But my argument doesn't depend on the assumption that the range of masses in  $R_G$  is limited. If  $R_G$  includes every possible mass, the explanation for this is because whatever mass an element may take, it can retain the same number of protons in its nucleus while having that mass.

that, I think there is no possible world in which gold atoms exist (and thus retain their nucleic protons) while the mass of their electrons is substantially increased.

I think this because I accept a generalization of the argument which concludes that in every possible world in which salt and water exist, salt dissolves in water (Bird, 2001).<sup>8</sup> A generalization of that argument, I believe, is sound and shows that at least for composite chemical substances, those substances do not exist in possible worlds which lack our laws of nature (or close approximations of them). Rather, when we imagine worlds with radically different laws of nature in which we believe there are gold atoms, we are in fact imagining things that merely have the appearance of gold, much as we might think ourselves to be imagining water when we are in fact imagining XYZ (Putnam, 1975).

For similar reasons, I would say that appealing to natural laws applying to the nuclei of gold atoms does not add to an explanation appealing to the nuclei of gold atoms. Appealing to such natural laws expands upon what we already know about how the nuclei of gold atoms work, in the same way that appealing to the laws of electromagnetism to explain why salt dissolves water expands upon the fact that water is formed from polar covalent bonds.

Thus, if having a mass in the range of  $R_G$  is an essential property of gold, gold's real definition is redundant. The resulting definition says the following: *gold is the chemical element with an atomic number of 79 that also has a mass in the range  $R_G$ .* That definition is redundant because the reason why gold atoms have a mass in the range of  $R_G$  is that that is the range at which they have the appropriate number of protons. So given the transitivity of explanation, it follows that having an atomic number of 79 explains everything that having a mass in the range  $R_G$  explains.

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<sup>8</sup>(Bird, 2001, p. 272) describes this generalization himself. He says the generalization applies to all 'substances'. I assume that this term picks out at least chemical substances. Some single elements, including gold, are chemical substances. So gold is in the scope of Bird's generalization.

Bird's argument does not imply dispositional essentialism. As he notes (Bird, 2001, p. 267), the argument is independent of that view. Likewise, my argument is independent of dispositional essentialism.

But since there are no redundant real definitions, the property of having a mass in the range of  $R_G$  is not mentioned in gold's real definition. So having a mass in the range  $R_G$  is not essential to gold, in the definitional sense. Thus, both (SMA) and (IMA) are false, since they entail that having a mass in the range  $R_G$  is essential to the kind gold. This concludes my first argument.

I now show that this argument can be extended to show that (SMA.I) and (IMA.I) are false, given that the real definition of an individual gold atom, such as Gilbert, mentions the property of being gold. Recall that we established that it follows on these assumptions that if (SMA) and (IMA) are true, having a mass in the range  $R_G$  is an essential property of Gilbert.

But given that Gilbert's being gold is mentioned in its real definition and given that this entails his having an atomic number of 79, it follows that if having a mass in the range  $R_G$  is mentioned in Gilbert's real definition, that definition is redundant. But since no real definitions are redundant, this is impossible.

Thus, I conclude on the basis of this argument that on the assumption being gold is mentioned in the real definition of Gilbert, (SMA.I) and (IMA.I) are false. Moreover, I have shown that even without this assumption, (SMA.K) and (IMA.K) are false. Hence, on the basis of these arguments, I conclude that (SMA) and (IMA) are false.

## 2.5 Fine's Asymmetry

The above argument assumes the accounts of sparsity and intrinsicity that Cowling, Wildman, and Denby assume. However, some have proposed alternative accounts of these notions in order to render (SMA) and (IMA) consistent with one of Fine's arguments.

In this section, I show that even on these accounts, it follows that (SMA) and

(IMA) is false.

One of Fine's most well-known examples appeals to the fact that Socrates is not essentially non-identical to the Eiffel Tower. Another well-known example appeals to the fact that Socrates is not essentially a member of his singleton set.

Presumably, Socrates's real definition fails to mention his being a member of his singleton set. Thus, the property of being a member of that set is not essential to Socrates.

However, Fine believes that the singleton set has the property of having Socrates as a member essentially. Thus, the property of having Socrates as a member is essential to the singleton set of Socrates. Hence, Fine says, "we want to say that it is essential to the singleton to have Socrates as a member, but that it is not essential to Socrates to be a member of the singleton." (Fine, 1994, p. 7)

In summary, according to Fine, while it is not the case that Socrates is essentially a member of the singleton set of Socrates, it is the case that the singleton set of Socrates essentially has Socrates as a member. Call the conjunction of these claims **Fine's asymmetry**.

Fine's asymmetry leads to a problem for (SMA) and (IMA). Suppose the property of having Socrates as a member is essential to the singleton set of Socrates. Then this property must be sparse and intrinsic, given (SMA) and (IMA). But then, presumably, the property of being a member of that set should also be sparse and intrinsic. Thus, Socrates is essentially a member of his singleton set, given (SMA) and (IMA).

Let us instead suppose that the property of being a member of Socrates's singleton set is not essential to Socrates. Then, this property will be neither sparse nor intrinsic, given (SMA) and (IMA). But then, presumably, having Socrates as a member is neither sparse nor intrinsic either. Thus, having Socrates as a member cannot be essential to the singleton set of Socrates.

For this reason, it appears that (SMA) and (IMA) contradict Fine's asymmetry.

Cowling, Wildman, and Denby were aware of of this issue when they proposed their accounts. And their response was to say that Fine’s asymmetry is false.

Thus, Cowling denies that having Socrates as a member is essential to the singleton set of Socrates: “abstract objects are distinguished from concrete objects precisely because they lack natures [definitionally essential properties]. In particular, they bear no sparse properties.” (Cowling, 2013, fn. 30)

By contrast, Wildman affirms that Socrates is essentially a member of his singleton. Hence, he says, “Fine was simply wrong about the relation being unessential to Socrates.” (Wildman, 2013, p. 781)

Finally, Denby concurs with Cowling: “The best response to this worry, I think, is to deny that sets have their members essentially.” (Denby, 2014, p. 94)

Nevertheless, since this time, some have proposed that (SMA) and (IMA) can be made consistent with Fine’s asymmetry.

Thiago Xavier de Melo argues that (SMA) must accommodate Fine’s asymmetry because “given the conceivability of Fine’s singleton case, the standard version of sparse modalism cannot be defended as a conceptual analysis of essence.” (De Melo, 2019, p. 541)

Thus, de Melo proposes that the sparseness of a property belonging to an individual is relative to the kind to which it belongs. Hence, he says,

Since the singleton {Socrates} essentially has Socrates as a member, the membership relation must be perfectly natural [sparse] relative to. . . a kind that includes the singleton. But it doesn’t follow that the membership relation is perfectly natural. . . relative to a kind that includes Socrates. (De Melo, 2019, p. 545)<sup>9</sup>

De Melo’s proposal seems to be this: (i) it is not the case that things have sparse

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<sup>9</sup>De Melo also relativizes sparse relations to slots. But since I am only concerned with accounts of essential properties and not of essential relations, I have omitted discussion of this aspect of his views.

properties *simpliciter*; (ii) the property of being a member of the singleton set of Socrates is not sparse for Socrates because Socrates is not a member of a kind for which this is sparse; and (iii) the property of having Socrates as a member is sparse for the singleton set of Socrates because the singleton set of Socrates is a member of a kind for which this is sparse.

De Melo does not say that these theses are true. Nor does de Melo say what it is for a property to be sparse relative to a kind.

His argument seems to be rather that given that it is conceivable that Fine's asymmetry is true, it is conceivable that (i),(ii), and (iii) are true: "the account isn't committed to the essentialist [Fine's asymmetry] or to the naturalness claims [theses (i)–(iii)] above. It is only committed to the conceivability of the naturalness claim conditional on the conceivability of the essentialist claim." (De Melo, 2019, p. 544) And therefore, because (i)–(iii) are conceivable, (SMA) follows from a successful conceptual analysis of essence.

One can grant that if it is conceivable that Fine's asymmetry is true, then it is conceivable that (i)–(iii) are true. But one could also grant that if it is conceivable that Fine's asymmetry is true, it is also conceivable that (i)–(iii) are false. After all, that is presumably what Cowling and Wildman conceived when they supposed that Fine's asymmetry is inconsistent with their view.

Some may find the following analogy helpful for grasping this point. It is tautologous to say that if it is conceivable that my shirt is red, it is conceivable my shirt is red. But it is consistent with this tautology that if it is conceivable my shirt is red, it is conceivable that my shirt is not red.

My claim is that even if de Melo's conditional is true, indeed, even if it is obviously true (once understood), then an analogous conditional can be maintained in light of what Cowling and Wildman have said.

De Melo assumes that Fine's asymmetry is conceivable. Moreover, because it

is conceivable, (SMA) cannot be “defended as a conceptual analysis” if (SMA) is inconsistent with Fine’s asymmetry. So his argument is aimed at showing that it is conceivable that (SMA) and Fine’s asymmetry are not inconsistent.

One can agree with de Melo that for (SMA) to be the basis for a successful conceptual analysis, it must be conceivable that it and Fine’s asymmetry are true. The problem with de Melo’s argument is that this is not sufficient for showing that (SMA) provides the basis for a successful analysis. In fact, the conceivability of Cowling and Wildman’s own claims is sufficient for showing that (SMA) cannot provide the basis for a successful analysis.

To show this, I will suppose that (SMA) is a successful conceptual analysis just in case it is true in all conceivable worlds. Moreover, I will suppose a proposition,  $p$ , is conceivable just in case it is true in some conceivable world.

On these assumptions, de Melo’s claim is that Cowling and Wildman’s views are not successful as a conceptual analysis because on their assumptions (SMA) is false in all conceivable worlds where Fine’s asymmetry is true.

However, the conceivability of de Melo’s theses would still not vindicate a successful analysis appealing to (SMA). This is because, (SMA) is false in some conceivable worlds where Fine’s asymmetry is true. These are, presumably, the worlds which Cowling and Wildman conceived and in which his theses (i)–(iii) are false.

Think about it like this. We might agree that a successful conceptual analysis of knowledge will say something along the following lines: in all conceivable worlds  $S$  knows that  $p$  just in case  $q$ .

If there are conceivable worlds (Gettier worlds for  $q$ ) where  $S$  knows that  $p$  and ‘ $q$ ’ is false, an analysis appealing to ‘ $q$ ’ is not successful.

On de Melo’s account, there are still conceivable worlds where (SMA) and Fine’s asymmetry are false. It’s just that these are not all the worlds where (SMA) is true.

It would be a mistake to infer that (SMA) is successful as a conceptual analysis just

in case it and Fine's asymmetry are true in *some* conceivable world. It may be that in *some* conceivable world, every statement that we know is also a statement about which we have a justified true belief. But the fact that there is another conceivable world where knowledge and justified true belief come apart shows that this is not a successful conceptual analysis of knowledge.

Moreover, I think it is *conceivable* that the property of having a mass in the range  $R_G$  is sparse relative to the kind gold atom. But since I have shown that it is not essential to the kind gold atom, it follows that given that the actual world is conceivable, de Melo's conceptual analysis is false.

De Melo proposes to reconcile Fine's asymmetry and (SMA). Similarly, Gaétan Bovey proposes to reconcile Fine's asymmetry and (IMA)

Bovey says that we can reconcile the two by affirming the following account of intrinsic properties:

(G) A property,  $P$ , is intrinsic to an individual,  $x$ , just in case  $x$  has  $P$  and every fact in virtue of which  $x$  has  $P$  has some part of  $x$  as a constituent. (Bovey, 2021, p. 7725)<sup>10</sup>

So for example, Bovey could say that the color of a composite object is intrinsic to that object because every fact in virtue of which that object has that color has a part of that object as a constituent.

By contrast, Bovey would say that the property of being the tallest person in the room is not intrinsic to me because some fact in virtue of which I am the tallest person in the room fails to have a part of me as a constituent. That fact, presumably, says something about other people not being in the room.

What is crucial to Bovey's (G) is its notion of parthood. According to Bovey,

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<sup>10</sup>I have restated this to make Bovey's formulation correspond to my own usage. I have also trimmed down the amount of formal notation used by Bovey.

Bovey's 'facts' are structured propositions, or objects identified with structured propositions, assuming the theory of structured propositions is true. This usage follows (Rosen, 2010, pp. 114–115).

[T]he notion of parthood. . . is not to be construed in its usual and strict mereological sense. . . there are other kinds of parthood relations such as set-membership, fact-constituency, as well as the relation between a sequence and its members (to name only a few). (Bovey, 2021, p. 7725)

Hence, Bovey claims that the singleton set of Socrates's possession of the property of having Socrates as a member holds only in virtue of facts about Socrates. But Socrates is a part of the singleton, in Bovey's expansive notion of 'parthood'. Thus, having Socrates as a member is intrinsic to the singleton set of Socrates.

By contrast, the property of being a member of the singleton set of Socrates is not had in virtue of facts about the parts of Socrates. Presumably, it has to do with some facts about sets. But sets are not parts of Socrates. Hence, the property of being a member of the singleton set of Socrates is not intrinsic to Socrates. Thus, Bovey vindicates (IMA) from the challenge of Fine's asymmetry.

However, the argument of section 2.4 still applies to (IMA) on Bovey's account. For as is clear from what Bovey says, his account of parthood counts the "usual and strict mereological" notion of part as 'parts' in the sense invoked by (G). The notion of parthood that I appealed to in the argument in section 2.4 was this usual and strict mereological notion.

Thus, I would say that Gilbert, a typical gold atom, has the property of having mass in the range  $R_G$ . Moreover, every fact in virtue of which Gilbert has a mass in the range  $R_G$  has some parts of Gilbert as a constituent. After all, these facts appeal to the mass of Gilbert's parts.

Thus, it follows that having a mass in the range  $R_G$  is essential to Gilbert on (IMA) and (G). But since I have shown that this property is not essential to Gilbert, (G) does not vindicate (IMA) from my argument.

# Chapter 3

## Essential Dependence

### 3.1 Fine on Ontological Dependence

There is a distinctively metaphysical sense in which some individuals are said to depend on other individuals. According to Kit Fine, this sense is used in statements such as ‘sets depend on their members’, ‘the parts depend on the whole’ (asserting a version of holism), and ‘substances are independent of everything’. (Fine, 1995a, pp. 269–270) Following Fine, let us call the variety of dependence mentioned in these sentences **ontological dependence**.

Ontological dependence is not causal dependence. The existence of Socrates does not cause the singleton set of Socrates to exist. Nor is ontological dependence metaphysical necessitation. For consider that the existence of Socrates metaphysically necessitates the existence of the singleton set of Socrates. It does not then follow that Socrates ontologically depends on his singleton. On the contrary, if anything, it is the singleton set of Socrates that ontologically depends on Socrates.

Some have affirmed a close relationship between essence and ontological dependence. Indeed, Fine says the following:

For we may take  $x$  to depend upon  $y$  if  $y$  is a constituent of a proposition

that is true in virtue of the identity of  $x$  or, alternatively, if  $y$  is a constituent of an essential property of  $x$ . Thus for the purpose of achieving fit, we may identify the being or essence of  $x$  with the collection of propositions that are true in virtue of its identity (or with the corresponding collection of essential properties). (Fine, 1995b, p. 275).<sup>1</sup>

Here I understand Fine's ' $x$ ' and ' $y$ ' to have individuals as values.

Fine's account is meant to be a generalization of sentences such as 'sets depend on their members'. That is, Fine's account is meant to imply that if Socrates is a constituent of an essential property of the singleton set of Socrates, then 'the singleton set of Socrates depends on Socrates' is a true instance of the statement 'sets depend on their members'. Thus, by 'depends' in the above Fine means 'ontologically depends'.

Fine's account has the form ' $A$  if  $B$  or if  $C$ '. I read statements of this form as affirming two sufficient conditions on the truth of ' $A$ '. If that's right, then Fine's account is equivalent to the following conjunction: (i)  $x$  ontologically depends on  $y$  if  $y$  is a constituent of a proposition true in virtue of the identity of  $x$ , and (ii)  $x$  ontologically depends on  $y$  if  $y$  is a constituent of an essential property of  $x$ .

I will defend this reading in the next section, but first I will explain what my goals in this chapter are.

On my reading, Fine's account implies that if ' $x$  essentially depends on  $y$ ', then ' $x$  ontologically depends on  $y$ ', where for  $x$  to essentially depend on  $y$  is for  $y$  to be a constituent of a property in  $x$ 's real definition.

Following Kathryn Koslicki (Koslicki, 2012, p. 197), we can say that when an individual  $y$  is a constituent of an essential property,  $y$  essentially depends on the bearer of that property. Hence, we get the following definition of **essential dependence**:

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<sup>1</sup>See also his dependency axiom (ii) in (Fine, 1995a, p. 248). For subsequent and related discussion, see (Correia, 2000, p. 297), (Lowe, 2008, p. 37), (Rosen, 2010, p. 119), (Koslicki, 2012, p. 197), (Trogon, 2013, pp. 473–477), (Dasgupta, 2014, p. 567), (Kment, 2014, p. 159), (Tahko and Lowe, 2015, pp. 22–25), (Schaffer, 2018, pp. 20–22), (Wilson, 2020), (Fine, 2020b), (Cameron, 2022, p. 110–119), (Glazier, 2022, pp. 32–36).

(ED.I) For all individuals  $x$  and  $y$ ,  $x$  essentially depends on  $y$  just in case there is some property,  $P$ , mentioned in  $x$ 's real definition and  $P$  has  $y$  as a constituent.

Fine mostly discusses the dependence of individuals on other individuals. But it is also true that some kinds ontologically depend on other kinds. Thus, the kind gold atom ontologically depends on the kind proton. Hence, we require an extension of Fine's definition of essential dependence to kinds:

(ED.K) For all kinds  $K_1$  and  $K_2$ ,  $K_1$  essentially depends on  $K_2$  just in case there is some property,  $P$ , mentioned in  $K_1$ 's real definition and  $P$  has  $K_2$  as a constituent.

Let us refer to the conjunction of (ED.I) and (ED.K) as (ED).

On my interpretation, Fine proposes to analyze or reduce ontological dependence to essential dependence. Thus, Fine's proposal entails the following:

(ED.I $\rightarrow$ OD.I) For all individuals  $x$  and  $y$ , if  $x$  essentially depends on  $y$ ,  $x$  ontologically depends on  $y$ .

(ED.K $\rightarrow$ OD.K) For all kinds  $K_1$  and  $K_2$ , if  $K_1$  essentially depends on  $K_2$ , then  $K_1$  ontologically depends on  $K_2$ .

Let us refer to the conjunction of (ED.I $\rightarrow$ OD.I) and (ED.K $\rightarrow$ OD.K) as (ED $\rightarrow$ OD).

On my interpretation, Fine's account of ontological dependence implies (ED $\rightarrow$ OD).

In this chapter, I will show that (ED $\rightarrow$ OD) is false. In particular, I will show that the tiger-species (*Panthera tigris*) essentially depends on at least one of its ancestors, which I denote by the term ' $A$ ', even though it does not ontologically depend on  $A$ .

I deny (ED $\rightarrow$ OD). For that denial to be even remotely plausible, it must be that Fine is not merely using 'ontological dependence' to mean 'is a constituent of an essential property'. Or again, to put it in my own terms, Fine cannot be stipulating that 'ontological dependence' just means 'essential dependence'.

However, I do not think that Fine is proposing that  $(ED \rightarrow OD)$  is true by stipulation. For recall that Fine introduced the notion of ontological dependence by way of example sentences. The examples were not claims invented by Fine. He is saying that the examples given by other metaphysicians are examples of ontological dependence. And since  $(ED \rightarrow OD)$  is his proposal, to say that  $(ED \rightarrow OD)$  is true by stipulation would be to falsely attribute  $(ED \rightarrow OD)$  to past metaphysicians and destroy the originality of Fine's proposal.

Consider, also, the following. If  $(ED \rightarrow OD)$  is true by stipulation, then the sentence 'the singleton set of Socrates depends on Socrates' has its meaning stipulated so that it implies that 'there is some property mentioned in the singleton set of Socrates's real definition that has Socrates as a constituent'.

Thus, it would be part of the meaning of the first sentence that Socrates is a constituent of a property mentioned in the real definition of his singleton. But it is not part of the meaning of 'the singleton set of Socrates depends on Socrates' that the singleton set of Socrates has a real definition. Someone who fully understands the sentence 'the singleton set of Socrates depends on Socrates' could reasonably (but perhaps mistakenly) accept that the singleton set of Socrates depends on Socrates while denying that sets have real definitions.

For these reasons, then, I think that  $(ED \rightarrow OD)$  is not true by stipulation.

## 3.2 Essence-Affirming Propositions

Recall that Fine stated his account of ontological dependence in the following sentence: "For we may take  $x$  to depend upon  $y$  if  $y$  is a constituent of a proposition that is true in virtue of the identity of  $x$  or, alternatively, if  $y$  is a constituent of an essential property of  $x$ ." (Fine, 1995b, p. 275)

In this section, I will show that this sentence is false if  $(ED \rightarrow OD)$  is false. Equiv-

alently, I will show that Fine's sentence implies (ED $\rightarrow$ OD).

In the previous section, I mentioned that Fine's account has the form 'A if B or if C'. I read statements of this form as affirming two sufficient conditions on the truth of 'A'.

I think this is a plausible ordinary rendering of such statements. Thus, to say 'this person is Socrates if he is the wisest in Athens or if he is the husband of Xanthippe' is to state two sufficient conditions on being the person Socrates.

Nevertheless, some may disagree with my interpretation. For example, some may think that Fine did not mean to employ the ordinary usage of such statements. Or some may disagree I am mistaken about the ordinary usage of such statements.

They would say instead that perhaps Fine really meant to affirm a disjunction of sufficient conditions. Thus, his sentence has the form 'A if B or A if C'.

On this alternative interpretation, Fine's view does not entail (ED $\rightarrow$ OD). Thus, showing (ED $\rightarrow$ OD) to be false would not say anything about the falsity of Fine's view.

I will now argue, however, that this alternative interpretation is irrelevant to my argument. And this is because the disjuncts, on this proposal, are in fact equivalent.

I will begin by explaining what Fine means when he uses expressions of the form 'it is true in virtue of the identity of  $x$  that  $p$ '.

Expressions of this form take propositions or statements as values of  $p$  (usually propositions; I will assume this going forward). For this reason they are called **sentential expressions of essence**.

A number of authors use related expressions, such as 'it is essential to  $x$  that  $p$ ' and 'it lies in the nature of  $x$  that  $p$ '.<sup>2</sup> These are often assumed or stipulated to be equivalent to Fine's preferred form of expression. Moreover, according to Kathryn

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<sup>2</sup>See, e.g., (Correia, 2000, p. 295–296), (Teitel, 2019, p. 44), and (Ditter, 2024, p. 3). (Fine, 1995c, fn. 2) uses the term 'identity' in such locutions as synonymous with 'essence', and 'nature'. Hence, one can derive from his usage at least two other forms of expression: 'it is true in virtue of the essence of  $x$  that  $p$ ' and 'it is true in virtue of the nature of  $x$  that  $p$ '.

Koslicki and Michael Raven, “the sentential approach [to expressing claims about essence] has become the dominant approach.” (Koslicki and Raven, 2024, p. 9)

Such sentential expressions of essence are related to the more familiar **predicational expressions of essence** that I have employed thus far, that is, to statements of the form ‘ $x$  is essentially  $F$ ’. This is admitted by Fine himself, who says,

[T]o express the claim that Socrates essentially thinks [in sentential form], we would first form the sentence of ‘Socrates thinks’. . . We would then prefix the operator ‘It is true in virtue of the identity of Socrates that’ to obtain the sentence ‘It is true in virtue of the identity of Socrates that Socrates thinks’. (Fine, 1995c, p. 54)

To see what Fine is saying here, consider some further examples. Consider the propositions *humans are animals* and *humans are rational*. Assuming the classical definition of humanity, these propositions affirm properties that are essential to the kind human. Thus, it is true that humans are essentially animals and humans are essentially rational, assuming the classical definition.

In the above, Fine is saying that we can take a proposition like *humans are animals*, prefix it with the operator ‘it is true virtue of the identity of humans that’ and obtain a statement that is equivalent to ‘humans are essentially animals’. That resulting statement is just ‘it is true in virtue of the identity of humans that humans are animals.’

With this in mind, we can now see what Fine takes the to be the values of ‘ $p$ ’ in true statements of the form ‘it is true in virtue of the identity of humans that  $p$ ’ and in ‘it is true in virtue of the identity of Socrates that  $p$ ’. These are just the propositions that affirm of humans or of Socrates the properties that are mentioned in their real definitions, that is, their essential properties. Thus, assuming the classical definition, among such values for  $p$  in ‘it is essential to humans that  $p$ ’ are the propositions *humans are animals* and *humans are rational*.

Again, these propositions affirm of the kind human properties that are essential the kind human. For this reason, I call the values of  $p$  that satisfy such formulas **essence-affirming propositions** of an individual,  $x$ , or kind,  $K$ , respectively.

Recall that Fine says that “we may identify” the essence of an individual,  $x$  as the collection of propositions that are true in virtue of the identity of  $x$  (Fine, 1995b, p. 275). This is a puzzling remark. It is puzzling because properties are not identical to propositions. I think that Fine, like most people, agrees with this. He doesn’t mean that essential properties of  $x$  and propositions true in virtue of the identity of  $x$  are literally identical.

However, in light of what I have said about essence-affirming propositions, we can understand why he says this.

The collection of propositions which ‘correspond’, in Fine’s sense, to an individual’s essential properties are that individual’s essence-affirming propositions. Hence, any proposition,  $p$ , which satisfies Fine’s schema ‘it is true in virtue of the identity of  $x$  that  $p$ ’ is a proposition which can be expressed by a sentence of the form ‘ $x$  is  $F$ ’ where ‘ $F$ ’ is a predicate which designates an essential property of  $x$ . Thus, any  $p$  picked out by Fine’s sentential expression corresponds to a property picked out by  $F$  in the predicational expression and vice-versa.

Now we are in a position to see why I say that the constituents of propositions true in virtue of the identity of  $x$  are all and only the constituents of the essential properties of  $x$ .

Suppose that a proposition expressed by a sentence of the form ‘ $x$  is  $F$ ’ has an individual,  $y$ , as a constituent if  $y$ , somehow, figures in the predicate ‘is  $F$ ’ in the right way. Moreover, suppose that a property  $P$ , designated by the predicate ‘is  $F$ ’ has an individual,  $y$ , as a constituent if  $y$  somehow figures in the predicate ‘is  $F$ ’ in the right way.

Then, assuming  $y$  is a constituent of  $P$  and  $P$  is designated by ‘is  $F$ ’,  $y$  is a

constituent of a proposition which can be expressed by a sentence of the form ‘ $x$  is  $F$ ’.

Likewise, assuming  $y$  is a constituent of a proposition which can be expressed by a sentence of the form ‘ $x$  is  $F$ ’,  $y$  is a constituent of the property designated by  $F$ .

Thus, it follows from these assumptions that the constituents of propositions true in virtue of the identity of  $x$  are all and only the constituents of the essential properties of  $x$ . Since I accept these assumptions, I conclude that the constituents of propositions true in virtue of the identity of  $x$  are all and only the constituents of the essential properties of  $x$ .

Recall that Fine said that  $x$  depends on  $y$  if  $y$  is a constituent of an essence-affirming proposition of  $x$  or, alternatively,  $y$  is a constituent of an essential property of  $x$ . If that statement has the form ‘ $A$  if  $B$  or  $A$  if  $C$ ’, then this does not matter for my argument, since both disjuncts are equivalent, as I have shown.

### 3.3 Against (ED $\rightarrow$ OD)

In this section, I present my argument against (ED $\rightarrow$ OD). I do not defend the premises of the argument here. I only wish to make its validity clear and to show that it entails that (ED $\rightarrow$ OD) is false.

Here is a summary of my argument.

- (1) The real definition of the tiger-species mentions the property of having  $A$  as an ancestor. [Premise]
- (2) If the real definition of the tiger-species mentions the property of having  $A$  as an ancestor, there is some property  $P$  mentioned in the real definition of the tiger-species that has  $A$  as a constituent. [Premise]
- (3) The tiger-species does not ontologically depend on  $A$ . [Premise]

∴ (4) The tiger-species essentially depends on  $A$ . [(1), (2), (ED)]

∴ (5) The tiger-species essentially depends on  $A$ , but the tiger-species does not ontologically depend on  $A$ . [(3), (4)]

In this argument, I use the term ‘tiger-species’ and the term ‘ $A$ ’. ‘ $A$ ’ designates an ancestor mentioned in what is called the ‘phylogenetic definition’ of the tiger-species. I discuss the referent of ‘ $A$ ’ and the notion of phylogenetic definition in section 3.4 below.

By ‘the tiger-species’ I mean to pick out whatever it is biologists pick out when they talk about tigers as a species (*Panthera tigris*).

It is a matter of some controversy whether biological species are kinds or individuals. The latter is sometimes said to be the dominant view of species among biologists and philosophers of biology<sup>3</sup>, although the former is a traditional assumption in the philosophy of language.<sup>4</sup>

If the tiger-species is an individual, then ‘the tiger-species’ refers to that individual. If the tiger-species is a kind, then ‘the tiger-species’ designates that kind. My argument assumes that the tiger-species is either an individual or a kind.

Given that the tiger-species is either an individual or kind, it follows that (5) is inconsistent with (ED→OD). If the tiger-species is an individual, it falsifies (ED.I→OD.I), and if the tiger-species is a kind, it falsifies (ED.K→OD.K). So either way, it follows that (ED→OD) is false.

Therefore, if my argument is sound, (ED→OD) is false. In the remainder of this chapter, I defend the premises of my argument.

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<sup>3</sup>See (Ghiselin, 1974), (Hull, 1976), and (Sober, 2000, pp. 152–162) for arguments in favor. See (Ereshefsky, 2017, pp. 3–18) for a summary of the issue.

<sup>4</sup>See e.g., (Putnam, 1975, p. 229), (Wiggins, 1980, p. 88), (Kripke, 1981, p. 121), and (Salmon, 1981, pp. 44–48). For more recent defenses of the kind view of species, see (Boyd, 1999), (Griffiths, 1999), (Millikan, 1999), (Wilson, 1999), and (LaPorte, 2004, pp. 8–17).

### 3.4 Phylogenetic Definition

Premise (1) says that the real definition of the tiger-species mentions the property of having  $A$  as an ancestor. According to Michael Devitt, the consensus view among philosophers of biology can be summarized as follows: “Biological taxa [categories like species, genus, family, etc.] have essences that are not intrinsic but wholly relational, particularly, historical properties.” (Devitt, 2023, p. 88)<sup>5</sup>

More exactly, the consensus view among philosophers of biology is that (i) all familiar<sup>6</sup> biological taxa have some essential properties that are also historical properties, and (ii) the only essential properties of biological taxa are historical properties.

In this section, I defend (1). But before I provide my argument for (1), I will first explain the relation of (1) to the consensus view.

The property of having  $A$  as an ancestor is a historical property of the tiger-species, since it is a property whose possession is due entirely to facts about the evolutionary history of the tiger-species. Hence, if (1) is true, the tiger-species has a historical property that is also a definitionally essential property. That is, (1) entails the first part of the consensus view.

However, one would err by appealing to the consensus to establish (1). This is because, as Devitt notes, the proponents of the consensus rarely specify exactly what the essential, historical properties are (Devitt, 2023, p. xiii). So although their view implies that some historical properties are essential, it does not imply specifically that

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<sup>5</sup>Proponents of the consensus include (De Queiroz, 1992, p. 307), (Griffiths, 1999), (Sterelny and Griffiths, 1999, p. 186), (Okasha, 2002), and (LaPorte, 2004, pp. 33–62). To be clear, the consensus view implies that these historical properties are essential. It is not to be confused with the claim that biological taxa do not have essences but that historical properties figure into their scientific definitions. (Ereshefsky, 2010, pp. 682–683) criticizes some authors along these lines. Devitt himself proposes that biological taxa have essential, historical properties but also essential, intrinsic properties. See (Devitt, 2018), and (Devitt, 2023, pp. 88–105).

<sup>6</sup>The thesis is most plausibly restricted to taxa we are familiar with, rather than all taxa for the following two reasons. First, the historical properties in question are properties bearing on the evolutionary history of a species. But for all we know there are alien species that did not come to exist through evolutionary processes. Second, the very first species (there could be several) could not have come into existence through evolutionary processes.

the property of having  $A$  as an ancestor is essential to the tiger-species. Thus, the consensus view does not entail (1).

So I cannot appeal to the consensus to show that (1) is true. But I will show that the motivations for (1) and the first part of the consensus view are related. For I believe that the best motivation for the first part of the consensus view is simply the prominence of phylogenetic systematics among contemporary approaches to biological classification (systematics).

If (1) is true some biological species have, what Devitt calls, partly historical essences. That is, some of their definitionally essential properties are historical properties. This is the first part of the consensus view.

But the consensus includes a second part, that is, that the only definitionally essential properties of taxa are historical properties. In a number of articles and a recent book, Devitt has provided forceful arguments against this claim (Devitt, 2008), (Devitt, 2010), (Devitt, 2021), and (Devitt, 2023).

(1) is consistent with Devitt's view that the essences of biological species do not consist entirely of historical properties. I am only saying that the property of having  $A$  as an ancestor is essential to the tiger-species. I am not saying it is the only essential property or that non-historical properties fail to be essential. And as I will explain, I think one can maintain Devitt's view even if the only properties mentioned in the phylogenetic definition of a species are historical properties.

I now begin my argument for (1). Practitioners of **phylogenetic systematics** define a species by determining its **phylogenetic definition**. Roughly, a phylogenetic definition defines a species by its position on the tree of life. This is the dominant theory of the classification of species in contemporary biology. Hence, E.O. Wiley and Bruce S. Lieberman say the following in the second edition of their textbook on phylogenetic systematics:

In the first edition, Wiley devoted an entire chapter to alternative "schools"

of evolutionary taxonomy and phenetics. But that was over 20 years ago, and there is little need for such a chapter.<sup>7</sup>

This is because phylogenetic systematics is, on their view, the only viable program of systematics remaining.

To show the bearing of phylogenetic systematics on (1), I will argue for the following claims.

First, a phylogenetic definition of the tiger-species expresses necessary and sufficient conditions on identity with the tiger-species.

Second, a phylogenetic definition of the tiger-species is either a definition of our concept of a species, a stipulative definition, or a real definition. Since its phylogenetic definition purports neither to be a definition of our concept of the tiger-species nor a stipulative definition, it must be a real definition of the the tiger-species. I accept this disjunction because I do not know of any other plausible kind of definition which phylogenetic definitions could be.

My argument will show that given the truth of phylogenetic systematics, the properties mentioned in a phylogenetic definition are the properties mentioned in the tiger-species's real definition. I think that absent some defeater, we are justified in believing statements we deduce from phylogenetic definitions.

My first claim says that a phylogenetic definition of the tiger-species expresses necessary and sufficient conditions on identity with the tiger-species. Despite that, I believe that the conditions expressed therein are strictly false. I will explain why I think this when I turn to a defense of my first claim. But before I do that, I want to show that this claim is not as radical as it sounds nor self-undermining of my case

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<sup>7</sup>(Wiley and Lieberman, 2011, p. 7). Evolutionary taxonomy corresponds most closely to the traditional system of classification taught in introductory textbooks. Of this approach, (Wiley and Lieberman, 2011, p. 4) say the following: 'Evolutionary taxonomy as a program of systematic inquiry, has. . . largely disappeared. However, its legacy lives on in numerous textbooks, in the form of classifications that contain groups whose existence is based on criteria other than common ancestry [such as similarity in genetic code and in appearance], and in this respect, its legacy is negative.'

for (1).

In my view, it is not surprising that phylogenetic definitions are strictly false. Many scientific claims are strictly false. This is because they are often intended only as good approximations of the truth.

For example, I think that probably the current scientific theory of gravity is false. Its formulation of the law of universal gravitation specifies down to a very exact decimal place, what the the gravitational attraction of my right hand to my left hand is. But probably, the result we would get by simply running the numbers would be a little off from what the true gravitational attraction of my right hand to my left hand is. If so, that law has a false consequence. And so it is false.

Nevertheless, I think the law is approximately true. Because of that, we can engage in the following kind of reasoning. We can suppose that the law is true, along with some other claims and deduce some facts about the world from those claims. Then, absent any defeater, we are justified in believing those facts we deduced. After all, the law is part of a *generally* reliable scientific theory.

In the same way, I think that phylogenetic definitions are part of a generally reliable theory, namely, the current theory of biological classification. Hence, we can engage in that same reasoning and deduce consequences which we are justified in believing therefrom. Among such consequences, I claim, is that the real definition of the tiger-species mentions the property of having *A* as an ancestor, that is, my (1). That is what my first and second claims together show.

I now turn to the central claims of my argument. In particular, I first argue that the phylogenetic definition of the tiger-species expresses necessary and sufficient conditions on identity with the tiger-species.

A phylogenetic definition includes at least two parts. First, it says that a species belongs to a certain group of species who share an ancestor in common. The group includes all the descendants of that ancestor up to a certain point. Hence, it is called

a **monophyletic group**. So for example, a definition of the tiger-species says that it is among the descendants of the first feline species. In my argument, that species is denoted by ‘*A*’.

The second part of a phylogenetic definition says that a species descended from that ancestor because of the occurrence of a particular type of event. This type of event is called a ‘speciation event’. Thus, Samir Okasha summarizes the structure of a phylogenetic definition as follows:

Phylogenetic species concepts identify species in terms of evolutionary history — they treat species as particular chunks of the genealogical nexus, bounded by speciation events and extinction events.<sup>8</sup>

Roughly, a **speciation event** occurs at least when one population in a species breaks off from the rest and when the that break-away group becomes subject to types of factors influencing its survival or other evolutionarily salient features which differ from the types of factors influencing the survival of the original group. These types of factors are usually called ‘evolutionary pressures’.

So for example, we might suppose that at one point one population among the tiger-species’s ancestors separated from the rest and wandered into the jungle, where stripes were selected for. Over time, when evolutionary pressures made a large enough difference, the break-away group evolved into a species different from the ancestor-species.<sup>9</sup> When we have specified the type of circumstances in which the tiger-species’s ancestor broke away and when we have specified the evolutionary pressures to which

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<sup>8</sup>(Okasha, 2002, p. 200).

<sup>9</sup>I say that “at least” this is an example of a speciation event since this is an example of branching evolution (‘cladogenetic speciation’), and all proponents of phylogenetic systematics agree that branching evolution sometimes results in the formation of a new species. Some also say that linear evolution, involving solely gradual changes in a species’s traits, never results in the formation of a new species. See (Sober, 2000, p. 150) for discussion.

An exact account of the factors sufficient for branching to occur is also controversial. See (LaPorte, 2004, pp. 53–56).

the tiger-species's ancestor was subjected, we have specified the type of the tiger-species's speciation event.

If phylogenetic definitions did not include this second part, they could not distinguish among the descendants of a common ancestor, that is, among members of the same monophyletic group. A bad definition of the tiger-species would say, for example, that the tiger-species descended from *A*. This definition is a bad definition of the tiger-species because *A* had many descendants, some of which are not identical with the tiger-species.

A phylogenetic definition is not like this bad definition since it adds that the tiger-species is distinguished from the others by the fact that it evolved due to the occurrence of a particular type of speciation event. The other descendants of the first feline species did not evolve because of this type of speciation event.

Let the phrase 'the tiger-species's speciation event' be shorthand for a more complete description of the type of speciation event mentioned in the phylogenetic definition of the tiger-species. When the shorthand is filled out, it will specify the type of actual circumstances in which the tiger-species evolved. Exactly how we fill out 'the tiger-species's speciation event' will thus depend on empirical facts regarding the tiger-species's evolution. The phylogenetic definition of the tiger-species will include this filled out version of the phrase 'the tiger-species's speciation event'.

Having the property of belonging to the monophyletic group with *A* as the first member is a necessary condition on identity with the tiger-species. And the possession of that property in conjunction with the possession of the property of evolving because of the occurrence of the tiger-species's speciation event is both a necessary and sufficient condition on identity with the tiger-species. Thus, the phylogenetic definition of the tiger-species at least purports to provide necessary and sufficient conditions on identity with the tiger-species.

Nevertheless, I think that a phylogenetic definition of the tiger-species is strictly

false. For I think that the tiger-species could have evolved because of a *slightly* different type of speciation event. But the phylogenetic definition of a species does not say this. When correct, it only summarizes the type of its actual speciation event.

How slight could the difference in the type of speciation event be? I think this is up to evolutionary theory to tell us. The differences I have in mind are differences so small that they have no bearing on an evolutionary account of how the tiger-species came into existence (the jungle had one less tree). But what exactly it takes for a difference to have bearing on such an evolutionary account is up to evolutionary theory to decide.

By contrast, I think that because biology is, partly, a historical science, the facts about particular individuals are relevant. And for this reason, I do not think the tiger-species could have evolved from an ancestor other than *A*, even if that ancestor were a qualitative duplicate of *A* who was not identical to *A*. To my mind, that would be like saying that it makes no difference to history whether it was Henry VIII who broke from the Catholic Church because a qualitative duplicate of Henry VIII who was not identical to Henry VIII would have done exactly the same thing.

Finally, the phylogenetic would be strictly false if we accepted Devitt's view. For the phylogenetic definition only makes mention of historical properties of the tiger-species. It says nothing about their current intrinsic properties. Taken literally, the phylogenetic definition of the tiger-species is consistent with the possibility that The tiger-species remains in existence despite a radical turnover in intrinsic properties. In a billion years, perhaps it will have all the intrinsic properties of, say, a species of bacteria.

You might think that's absurd. But some biologists and philosophers of biology have accepted it.<sup>10</sup> Devitt's view would prevent it. The only claim I am making is that if we endorse Devitt's argument, we may take that as a reason to reject

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<sup>10</sup>See, e.g., (LaPorte, 2004, p. 52) and the references therein.

this literalistic interpretation of the phylogenetic definition of the tiger-species. My argument is consistent both with Devitt's view and its denial.

Thus, the phylogenetic definition of the tiger-species is, on my view, strictly false. Nevertheless, as I argued above, I think that we may still infer that since the phylogenetic definitions mentions the property of having *A* as an ancestor, we are *prima facie* justified in concluding that the true necessary and sufficient conditions on identity with the tiger-species will mention this property.

I now argue that a phylogenetic definition of the tiger-species purports to be a real definition and neither a definition of our concept of the tiger-species nor a stipulation on how biologists use the word '*Panthera tigris*'.

It is obvious that the phylogenetic definition of the tiger-species is not a definition of our concept of the tiger-species. That is because most people who have a concept of the tiger-species do not have a concept of the type of speciation event from which the tiger-species evolved. So any definition mentioning this type of event cannot be a definition of our concept of the tiger-species. Therefore, since the phylogenetic definition of the tiger-species mentions this type of event, it is not a definition of our concept of the tiger-species.

Consider now whether phylogenetic definitions are stipulative definitions. For example, it might be thought that phylogeneticists are stipulating that the phrase 'the tiger-species' is whatever it is that meets a phylogenetic definition that systematists find good enough for their purposes.

According to phylogeneticists, not all information on the tree of life is relevant to the definition of a species. Consider, for example, that we could have used the tree of life to pick out the descendants of *A* that have stripes. The grouping of *A* with all its striped descendants is called a 'paraphyletic' group because it picks out some but not all of the descendants of *A*.

Phylogeneticists deny that paraphyletic groups are "real." Hence, Wiley and

Lieberman say, “Para- and polyphyletic groups are not real in nature,” (Wiley and Lieberman, 2011, p. 10) and “monophyletic groups are the only natural taxonomic groups of species in evolutionary biology.” (Wiley and Lieberman, 2011, p. 233)

Rather, “natural groups,” according to phylogeneticists, are groups that include an ancestor and *all* of its descendants. Recall that these just are monophyletic groups, the groups that are mentioned in a species’s phylogenetic definition.

Thus, the definition of the tiger-species will not say that the tiger-species is among the striped descendants of *A*. That would be a way of classifying the tiger-species in accordance with information on the tree of life. And if phylogeneticists were merely providing a stipulative definition of ‘*Panthera tigris*’ that would be a legitimate procedure. And it might even be useful for some biological purposes. But since paraphyletic groups are not natural groups, they are not mentioned in a species’s phylogenetic definition.

Consider that it may be useful for some purposes of evolutionary biology to define species in different ways. It may be useful to define species 1 by a monophyletic group. And it may be useful to define species 2 by a paraphyletic group. If phylogenetic definitions were stipulative, they could define different species differently since phylogeneticists (like everyone else) are free to stipulate, in whatever way they want, the definitions of the technical terms they introduce. But phylogeneticists do not do this. Indeed, such a procedure would be regarded as producing illegitimate and unscientific classifications of species.

Since, then, phylogeneticists are not free to stipulate, in whatever way they want, the definition of the term ‘*Panthera tigris*’, they cannot be providing a stipulative definition of this term.

Thus, I conclude that phylogenetic definitions are not stipulative definitions, and they are not mere definitions of our concept of a species. Therefore, on the basis of these arguments, I conclude that a phylogenetic definition of the tiger-species

approximates that species's real definition.

Recall, now, premise (1):

- (1) The real definition of the tiger-species mentions the property of having  $A$  as an ancestor. [Premise]

Given that the phylogenetic definition of the tiger-species approximates the tiger-species's real definition, the real definition of the tiger-species's says that it belongs to a certain monophyletic group. Hence, it mentions the property of having  $A$  as an ancestor. So I conclude on the basis of these arguments that premise (1) is true.

### 3.5 Constituents of Properties

Recall premise (2):

- (2) If the real definition of the tiger-species mentions the property of having  $A$  as an ancestor, there is some property  $P$  mentioned in the real definition of the tiger-species that has  $A$  as a constituent. [Premise]

Premise (2) requires me to say more about what it is for something to be a constituent of a property in Fine's sense.

Fine requires that the property of having Socrates as a member has Socrates as a constituent. (Fine, 1995b, p. 276) And I will show how one reason we might think this should also lead us to conclude that  $A$  is a constituent of a property mentioned in the tiger-species's real definition.

Fine claims that there is an analogy between nominal definitions (definitions of terms) and real definitions:

The notion of one object depending upon another is therefore the real counterpart to the nominal notion of one term being definable in terms of another. . . .

We understand a defined term (what it means) through the terms by which it is defined. Similarly, we understand a defined object (what it is) through the objects upon which it depends. (Fine, 1995a, p. 275)<sup>11</sup>

I take Fine's analogy to suggest the following. Suppose we think, for example, that the nominal definition of the term 'grue' is 'either blue before being observed or green after being observed'. The terms 'blue' and 'green' appear in this definition. If so, then on Fine's analogy to understand what 'grue' means we must understand what the terms 'blue' and 'green' mean.

More generally, the terms whose meaning we must understand in order to understand the meaning of 'grue' are just the terms on which 'grue' depends for its meaning. These are just the terms mentioned in the nominal definition of 'grue'.

Similarly, suppose that the real definition of an individual  $a$  mentions an individual  $b$ . Then, given Fine's analogy with nominal definition, the only way we can understand what it is to be  $a$  is by understanding  $b$ .

More generally, the individuals or kinds we must understand in order to understand what it is to be  $a$  are just the individuals or kinds on which  $a$  essentially depends. And these are the individuals or kinds mentioned in  $a$ 's real definition. Thus, the individuals or kinds mentioned in  $a$ 's real definition are the individuals or kinds on which  $a$  essentially depends.

Suppose  $a$  and  $b$  are individuals. Now recall (ED.I):

(ED.I) For all individuals  $x$  and  $y$ ,  $x$  essentially depends on  $y$  just in case there is some property,  $P$ , mentioned in  $x$ 's real definition and  $P$  has  $y$  as a constituent.

It follows, then, that since  $a$  essentially depends on  $b$  that there is some property,  $P$ , which occurs in  $a$ 's real definition which has  $b$  as a constituent. Likewise, suppose  $a$  and  $b$  are kinds. Then the same would follow given (ED.K).

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<sup>11</sup>(Lowe, 2008, p. 37) also endorses this analogy.

Thus, we may conclude that the following conditionals are true: if the real definition of some individual,  $x$ , mentions an individual,  $y$ , then some property,  $P$ , in  $x$ 's real definition has  $y$  as a constituent, and if the real definition of some kind,  $K_1$ , mentions a kind  $K_2$ , then some property,  $P$ , in  $K_1$ 's real definition has  $K_2$  as a constituent.

These conditionals along with some background assumptions entail Fine's claim that the singleton set of Socrates essentially depends on Socrates. For assume that the singleton set of Socrates exists and that the real definition of the singleton set of Socrates is 'the set whose sole member is Socrates'. Since Socrates is mentioned in the definition, then given my conditional, Fine's claim that the singleton set of Socrates essentially depends on Socrates is true.

Suppose now that the real definition of the tiger-species mentions the property of having  $A$  as an ancestor. Then, given my conditionals,  $A$  is a constituent of a property mentioned in the tiger-species's real definition. By conditional proof, it follows that if the real definition of the tiger-species mentions the property of having  $A$  as an ancestor, then  $A$  is a constituent of a property mentioned in the tiger-species's real definition. And this is just (2). So given my conditionals, (2) is true.

To be clear, I am not sure whether Fine had in mind these consequences when he gave this analogy between real definition and nominal definition. Still, I think that Fine's analogy, so interpreted, is true. And so I think this analogy shows that (2) is true.

### 3.6 Ontological Dependence

Recall premise (3):

- (3) The tiger-species does not ontologically depend on  $A$ .

Premise (3) relies on two, minimal connections between ontological dependence and

metaphysical explanation. Other things being equal, if the tiger-species ontologically depends on  $A$ , there is a metaphysical explanation of the existence of the tiger-species which appeals to the existence of  $A$ . Similarly, other things being equal, if there is a metaphysical explanation of the existence of the tiger-species appealing to the existence of some  $x$  (or several  $xx$ ), then the tiger-species ontologically depends on that  $x$  (or several  $xx$ ).

The tiger-species came into existence at a certain time. It came into existence when the first tigers came into existence. I take it this is not a coincidence. Indeed, if one were asked ‘why did the tiger-species come into existence?’ one’s answer would appeal to the conditions leading up to existence of the first tigers. Hence, one’s answer would include an appeal to the fact that tigers came into existence.

That answer, I believe, offers a metaphysical explanation of the existence of the tiger-species. It is the same kind of explanation said to be invoked in statements such as ‘the existence of Socrates explains the existence of the singleton set of Socrates’. It is not a causal explanation. It is not merely a case of metaphysical necessitation. Hence, I conclude that it is a case of metaphysical explanation.

Other things being equal, if there is a metaphysical explanation of the existence of the tiger-species appealing to the existence of some  $x$  (or several  $xx$ ), then the tiger-species ontologically depends on that  $x$  (or several  $xx$ ). There is a metaphysical explanation of the tiger-species appealing to the existence of tigers. Hence, the tiger-species ontologically depends on tigers.

‘The tiger-species ontologically depends on tigers’ does not say the same thing twice. And in saying ‘the tiger-species came into existence because tigers came into existence’ one is not repeating oneself. For the tiger-species is not the same as its member organisms. The tiger-species is one individual or kind. But tigers are several individuals. Hence, the one tiger-species is not the many individuals tigers.

Likewise, in saying that the tiger-species ontologically depends on tigers, I am

not saying that the tiger-species ontologically depends on Tony, Hobbes, and Tigger. The tiger-species can depend on all its members taken together without depending on each of them taken individually.

And this is a good thing. I will assume that that if  $x$  ontologically depends on some  $y$  (or several  $yy$ ), then the existence of  $x$  metaphysically necessitates the existence of that  $y$  (or  $yy$ ).<sup>12</sup> Hence, if the tiger-species ontologically depends on Tony, Hobbes, and Tigger, then in every world in which the tiger-species exists, Tony, Hobbes, and Tigger exist. But this is false. The tiger-species could fail to have these individuals as members.

Put more carefully, my claim that the tiger-species ontologically depends on its members is the claim that the tiger-species depends on some  $xx$  such that all and only tigers are among those  $xx$ . To suppose that this implies that tiger-species is, therefore, ontologically dependent on some  $y$  among those  $xx$  is to assume that ‘ontologically depends’ distributes. But I deny this. Just as a whole can depend on all its parts without depending on each of them, so a kind can depend on all its members without depending on each of them.

So understood, I think my claim that the tiger-species ontologically depends on its members (tigers) is plausible. And I suspect that few would deny it.

In recent years, Ross P. Cameron has argued that there are cases of metaphysical explanation without grounding or ontological dependence (Cameron, 2022, pp. 134–156).

Cameron’s arguments are against the claim that *whenever* there is a metaphysical

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<sup>12</sup>This is implied by Fine’s own view. Hence, he says, “[i]f the object exists then so must all of the objects in its essence; it must be possible to say what the object is without reference to what does not exist.” (Fine, 1995b, p. 280) For a related claim regarding grounding, see (Trogon, 2013, p. 466) and the references therein.

Fine’s view, together with (1) and (2), entail that  $A$  exists, even though  $A$  is a merely past species (it exists only at past times). I have concerns about the claim that  $A$  exists, for reasons related to what (Merricks, 2007, pp. 137–142) says about the existence of merely past individuals. But I am not disputing whether  $A$  exists in the argument of this section or in any of the arguments of this chapter.

explanation from  $a$  to  $b$ , there is some relation of grounding or ontological dependence from  $a$  to  $b$ .

This is different from my principle. My principle is that other things being equal, if there is a metaphysical explanation of the existence of the tiger-species which appeals to the existence of the members of the tiger-species. Since I think the universal claim can be false while my principle is true, I think that Cameron's arguments against the universal claim are consistent with my view.

Some may think that my restricted claim is not motivated given the falsity of the universal claim. The restricted claim is motivated by examples. I think about the singleton set of Socrates and about Socrates. I then think, probably, the existence of the singleton set of Socrates is explained by the existence of Socrates. From there, I conclude that I have good reason to think the singleton set of Socrates ontologically depends on Socrates. I would apply similar reasoning to other cases of alleged ontological dependence, such as the claim that wholes depends on their parts, and so on.

I think that reasoning is defeasible, just like reasoning from perception is defeasible. I look around my room and come to the conclusion that there are material objects around me. But perception is fallible, as we all know. So I shouldn't think that every time I look around my room and see material objects nearby that there are material objects nearby. Nevertheless, I think I have reason to make that conclusion right now.

Reasoning from metaphysical explanation to ontological dependence is defeasible. Sometimes we metaphysically explain the existence of  $a$  by appealing to the existence of  $b$ . And we then infer on that basis that there is a worldly connection of ontological dependence between  $b$  and  $a$ . But sometimes our explanations are mistaken. Nevertheless, I think I have reason to make that conclusion in the case of the tiger-species and its members.

Thus, I conclude that my principle is motivated, even given the falsity of the universal claim.

I turn now to the second part of my argument. For I have only established that the tiger-species ontologically depends on its members. But I have not established that it thus fails to ontologically depend on *A*.

Sometimes we give abbreviated explanations of something's existence or nonexistence. For example, suppose we are asked 'why does the singleton set of Socrates exist?' We might then answer 'because Socrates exists.' This is an adequate response, even though, some may say, it only gives a partial answer to the question 'why does the singleton set of Socrates exist?' A full answer may need to refer to things that explain Socrates's existence, such as Socrates's parts.

In the hopefully far distant future, the tiger-species has ceased to exist. Tigers are now extinct. Suppose we are asked 'why does the tiger-species not exist?' I think think it is then correct to answer with 'because there are no tigers.'

Moreover, this is an adequate response even though it may only give a partial answer to the question 'why does the tiger-species not exist?'

Consider now a filled-out metaphysical explanation which invokes all factors relevant to the metaphysical explanation of the tiger-species's non-existence. It may include things about tigers' parts for example.

That filled-out answer could include many things. But I do not think that this filled-out answer will refer to facts about the existence of *A*. After all, in our current circumstances, the tiger-species exists, but *A* does not exist (they do not exist at the same time). Moreover, at the hopefully distant point in the future when the tiger-species is extinct. *A* does not exist either (neither exists at that time). So the non-existence of *A* at a time is irrelevant to the existence of the tiger-species at a time.

In other words, the existence of *A* at a time does not affect whether the tiger-

species exists at a time or not. And hence, I think that the filled-out metaphysical explanation of the tiger-species's existence will omit reference to  $A$ 's existence.

Given that the filled-out metaphysical explanation lists all factors relevant to the existence of the tiger-species and that it omits reference to  $A$ 's existence, it follows that there is not a metaphysical explanation of the tiger-species's existence which appeals to  $A$  existence. Other things being equal, if the tiger-species ontologically depends on  $A$ , there is a metaphysical explanation of the existence of the tiger-species appealing to the existence of  $A$ . Since other things are equal and there is no such metaphysical explanation, I conclude that the tiger-species does not ontologically depend on  $A$ .

As in the above, this argument does not assume a universal claim. It does not assume that whenever  $a$  ontologically depends on  $b$ , there is a metaphysical explanation of the existence of  $a$  appealing to the existence of  $b$ .

Some may think my restricted claim is not motivated, given the universal claim is false. The restricted claim is motivated by examples. I think about the existence of my copy of *On the Plurality of Worlds*. I think a metaphysical explanation of the existence of my copy of *On the Plurality of Worlds* would not appeal to the existence of my nose. For this reason, I conclude that my copy of *On the Plurality of Worlds* does not ontologically depend on my nose. I would apply similar reasoning to assess other cases of alleged ontological independence, such as the claim that substances are independent of other things.

As with the reasoning supporting my first principle, the reasoning supporting this principle is defeasible. We are fallible in inferring there to be a worldly connection from  $a$  to  $b$  when there is a lack of explanation from  $a$ 's existence to  $b$ 's existence. Nevertheless, that does not preclude us from engaging in this reasoning now.

Tuomas Tahko and E. J. Lowe provide a case wherein some thing or things ontological depend on some other thing or things even though the existence of the latter

do not metaphysically explain the existence of the former. Hence, they say,

[E]ven though the existence of water depends on the existence of hydrogen and oxygen, it does not seem to be the case that the existence of hydrogen and water *explain* the existence of water. Rather, what explains the existence of water is the ability of hydrogen and oxygen atoms to form molecules (even though this is rather simplified. (Tahko and Lowe, 2015, p. 26)

However, I think Tahko and Lowe's description of this case is ambiguous. Tahko and Lowe do not specify whether they mean full explanation or partial explanation.

Taho and Lowe are probably right that the existence of a sample of hydrogen and water do not fully metaphysically explain the existence of a sample of water. A full metaphysical explanation would need to say something about them forming a molecule.

But I think it is also surely true that they partially metaphysically explain the existence of a sample of water. A full metaphysical explanation of the existence of a sample of water would make mention of the fact that that sample of hydrogen and oxygen exist, even if it also makes mention of their forming a molecule.

My claim was that *A*'s existence is not even partially mentioned in an answer to the question 'why does the tiger-species exist?' And so because of that, I think there is not even a partial metaphysical explanation from *A*'s existence to the tiger-species's existence. Lowe's case is consistent with my claim that *A*'s existence must partially explain the tiger-species existence, given the tiger-species ontologically depends on *A*.

Thus, I conclude that the tiger-species ontologically depends on tigers and does not ontologically depend on *A*. So (3) is true.

Thus, the premises of my argument are true. Hence, essential dependence does not imply ontological dependence. So (ED $\rightarrow$ OD) is false.

# Chapter 4

## Collective Essence and the Reduction of Modality

### 4.1 Fine's Reduction of Necessity

Among Kit Fine's most well-known proposals is the claim that metaphysically necessary truths reduce to truths about essence:

Indeed, it seems to me that far from viewing essence as a special case of necessity, we should view metaphysical necessity as a special case of essence. For each class of objects, be they concepts or individuals or entities of some other kind, will give rise to its own domain of necessary truths, the truths which flow from the nature of the objects in question. The metaphysically necessary truths can then be identified with the propositions which are true in virtue of the nature of all objects whatever.<sup>1</sup>

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<sup>1</sup>(Fine, 1994, p. 9). Discussion of this proposal has been fecund. See (Hale, 1996, pp. 102–114), (Fine, 2002, pp. 264–266), (Hale, 2002, p. 310–316 & fn. 25), (Fine, 2005), (Cameron, 2010, p. 352–354), (Correia, 2012), (Lowe, 2012, p. 939), (Hale, 2013, pp. 151–152), (Kment, 2014), (Fine, 2015, p. 310), (Dasgupta, 2016, pp. 384–399), (Hale, 2018), (Leech, 2018), (Noonan, 2018), (Van Cleve, 2018, pp. 23–28), (Michels, 2019), (Romero, 2019), (Teitel, 2019), (Casullo, 2020), (Correia, 2020), (Ditter, 2020), (Fine, 2020a), (Fine, 2020c), (Mackie, 2020), (Wallner, 2020), (Wallner and Vaidya, 2020), (Leech, 2021a, pp. 253–254), (Leech, 2021b), (Mallozzi, 2021), (Werner, 2021), (Wildman,

Consider the phrase “the propositions true in virtue of the nature of all objects whatever.” In section 3.2, I argued that such propositions are what I called essence-affirming propositions. That is, they are propositions picked out by sentences of the form ‘ $x$  is  $F$ ’, where, ‘ $F$ ’ designates a property mentioned in  $x$ ’s real definition.

Thus, we can restate Fine’s last sentence as follows: ‘the metaphysically necessary truths are identical to the essence-affirming propositions of all objects whatever.’<sup>2</sup>

The argument of this chapter consists of two claims. First, if the metaphysically necessary truths are identical to the essence-affirming propositions of all objects whatever, then there are collective essences. Second, there are no collective essences. Hence, it is false that the metaphysically necessary truths are identical to the essence-affirming propositions of all objects whatever.

Thus, the conclusion of the argument of this chapter is that Fine’s reduction of necessity to essence is false.

My first claim says that Fine’s last sentence, which expresses his reduction of necessity to essence, implies that there are collective essences.

A **collective essence** is the essence of several individuals taken together. It is not the essence of any single individual nor is it several essences of several individual: it is a single essence of several individuals (at least two).

One might say that Socrates’s essence consists of his being rational and his being an animal. And one might say that the Eiffel Tower’s essence consists of its being a tower and its being made in 1889. But proponents of collective essence say that the essence of Socrates and the Eiffel Tower, taken together, consists of these properties

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2021), (Bovey, 2022), (Correia and Skiles, 2022), (Ditter, 2022), (Glazier, 2022, pp. 22–27), (Noonan, 2022), (Correia, 2024, pp. 132–136), and (Koslicki, 2024).

The argument of this chapter is only in response to Fine’s reduction. I do not think it has bearing on all versions of the claim that modality reduces to essence.

<sup>2</sup>Formulating Fine’s reduction in this way suggests that Fine appeals to something closer to his notion of constitutive essence, rather than to consequential essence. For this distinction, see (Fine, 1995b, p. 276), (Fine, 1995c, p. 57), and (Fine, 2020a, p. 466). I think this is in keeping with Fine’s own views. Hence, in response to (Correia, 2020), (Fine, 2020a, p. 466) says that “[i]t may well be that Correia is correct in thinking the reductive aims of EM [(Fine, 1994)] require a non-consequentialist conception of essence.”

and a few more.<sup>3</sup> Hence, the collective essence of Socrates and the Eiffel Tower is not merely the union of the essential properties of Socrates and the essential properties of the Eiffel Tower.

The claim that Fine’s reduction appeals to collective essences I call **the standard interpretation**.

Commentators on Fine generally endorse the standard interpretation.<sup>4</sup> Even so, I think that the standard interpretation requires some defense. For one might maintain that while it is true that Fine himself had in mind the notion of collective essence when he provided his reduction of necessity, nevertheless, someone could accept that very reduction without endorsing the claim that there are collective essences.

Thus, my first claim does not merely say that the standard interpretation is an accurate interpretation of what Fine said when he gave his reduction of necessity to essence. My first claim says that Fine’s reduction requires there to be collective essences. Otherwise, Fine’s reduction is false. To reject the claim that there are collective essences is, thus, to reject Fine’s reduction.

My second claim is that there are no collective essences. On my view, a thing’s (or things’) essence tells us about the identity of that thing (or those things). But several things are not identical to anything (or things). For identity is a relation that holds only between an individual and itself.

Thus, my rejection of Fine’s reduction is not based on what it implies about modality<sup>5</sup> but on what it implies about essence. For as I will argue, it implies, falsely,

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<sup>3</sup>It’s typically assumed that the collective essence of a plurality includes the essential properties of all its members. For this principle, the monotonicity of essence, see (Correia, 2012, p. 640), (Michels, 2018), (Teitel, 2019, p. 45), and (Zylstra, 2019a).

<sup>4</sup>See (Correia, 2012, p. 640), (Michels, 2019, pp. 1018–1019), (Romero, 2019, p. 122), (Teitel, 2019, p. 44), (Zylstra, 2019a, p. 1089), (Ditter, 2020, p. 354), (Wildman, 2021, p. S1458), (Glazier, 2022, p. 24), and (Koslicki, 2024, p. 320). I have never read an article wherein the author rejects the standard interpretation. But sometimes authors fail to mention it. Fine explicitly appeals to the essence of several individuals (by way of appealing to the essence of things that are *F* in the indices of his essentialist operator) in (Fine, 1995a) and (Fine, 2000).

<sup>5</sup>Some believe that Fine’s reduction implies the truth of the claim that necessarily, everything necessarily exists (necessitism). See (Teitel, 2019)’s argument for this implication and (Werner, 2021)’s response. Fine himself says, “I believe that *anyone* in their right mind should accept necessitism.”

that essence and identity are unrelated.

Thus, I believe that my second claim is the crucial point at which I depart with Fine's views on essence. Hence, the majority of this chapter will be concerned with a defense of that claim.

In the next section, I argue for my first claim. In the subsequent sections, I argue for the second.

## 4.2 The Standard Interpretation

In this section, I argue that if the metaphysically necessary truths are identical to the essence-affirming propositions of all objects whatever, then there are collective essences.

My argument requires me to clarify the notion of a plurality.

A term which designates several object together is typically called a **plural term**. Consider the plural term 'Socrates and the Eiffel Tower.' This term does not designate one thing. Hence, we speak truly when we say things like 'Socrates and the Eiffel Tower are two things.'

The things designated by a plural term are a **plurality**. The term 'plurality,' despite being in the singular, does not always pick out a single object. Socrates and the Eiffel Tower are a plurality. But Socrates and the Eiffel Tower are not a single object. Rather, they are two objects.

Moreover, because of this, a plurality is not necessarily a set.<sup>6</sup> The set of Socrates and the Eiffel Tower is one object. But Socrates and the Eiffel Tower are two objects.

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(Fine, 2016, p. 550).

Fine has said, previously, that his reduction is related to the claim that there are worlds,  $w$ , where an individual,  $x$ , is  $F$  even though  $x$  does not exist in  $w$  (Fine, 2005, p. 332 & fn. 11). (Trogon, 2013, p. 474 & fn. 21) notes this too. (Plantinga, 1983) argued against this claim. Fine responded in (Fine, 1985).

<sup>6</sup>These remarks follow (Boolos, 1984), (Boolos, 1985), (Lewis, 1991, pp. 62–71), and (Oliver and Smiley, 2016, pp. 33–72).

So the plurality of Socrates and the Eiffel Tower is not the set of Socrates and the Eiffel Tower.

Nor is the plurality of Socrates and the Eiffel Tower a single composite object, such as the mereological fusion of Socrates and the Eiffel Tower. The mereological fusion of Socrates and the Eiffel Tower is one object. But Socrates and the Eiffel Tower are two objects. So the plurality of Socrates and the Eiffel Tower is not the mereological fusion of Socrates and the Eiffel Tower.

Now some may think that if there is a plurality of Socrates and the Eiffel Tower, there is also a set of Socrates and the Eiffel Tower. And some may think that if there is a plurality of Socrates and the Eiffel Tower, there is also a mereological fusion of Socrates and the Eiffel Tower.

I am not denying the claim that whenever there is a plurality of individuals, there is also a set or a mereological fusion of those individuals. Maybe that claim is true, maybe not. My point is that the plural term ‘Socrates and the Eiffel Tower’ does not designate a set or a mereological fusion of individuals. A set is one thing. A mereological fusion is also one thing. But Socrates and the Eiffel Tower are two things.

I will use ‘ $xx$ ’, ‘ $yy$ ’, and so forth as variables whose values take pluralities. Thus, given the definitional conception of essence, a property,  $P$ , is essential to a plurality,  $xx$ , just in case  $P$  is mentioned in the real definition of  $xx$ . And the essence of  $xx$  consists of all and only  $xx$ ’s essential properties.

As noted, Fine’s reduction generally makes use of sentences of the form ‘it is true in virtue of the nature of  $xx$  that  $p$ ’ (where ‘ $p$ ’ is a proposition) instead of sentences of the form ‘ $xx$  are essentially  $F$ .’ Thus, Fabrice Correia says,

Fine’s reductions are framed in terms of the predicate ‘... is true in virtue of the nature of —’, which takes an expression designating a proposition [in the first place] and an expression designating *one* object. . . or *several*

*objects* [in the second place]. . . to make a sentence.<sup>7</sup>

A proposition true in virtue of the nature of  $xx$  is an essence-affirming proposition of  $xx$ . Moreover, we can follow Fine’s account of the essence-affirming propositions of an individual in saying that the essence-affirming proposition of a plurality is a proposition which can be expressed by a sentence of the form ‘ $xx$  are  $F$ ’, where  $F$  designates a property mentioned in the real definition of  $xx$ .

Recall our restatement of Fine’s last sentence: ‘the metaphysically necessary truths are identical to the essence-affirming propositions of all objects whatever.’ We can now give one last reformulation of this statement so that it explicitly appeals to pluralities: for all metaphysically necessary truths,  $p$ ,  $p$  is identical to an essence-affirming proposition of some plurality or another.<sup>8</sup>

On its face, Fine’s reduction does not entail the standard interpretation. That is, for all I have said so far, Fine’s reduction is consistent with the claim that there are no collective essences.

This is because Fine, like (nearly) everyone who appeals to pluralities<sup>9</sup>, assumes that all individuals are pluralities. Hence, his reduction would still be true if all essence-affirming propositions were essence-affirming propositions of single individuals, instead of being essence-affirming propositions of several individuals.

I will now show that if Fine’s reduction is true, then there are essence-affirming propositions of Socrates and the Eiffel Tower. If so, then Fine’s reduction implies the standard interpretation.

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<sup>7</sup>(Correia, 2012, pp. 641–642).

<sup>8</sup>(Teitel, 2019, p. 44) calls this the “canonical reduction.”

(Fine, 2015, p. 310) explicitly denies that his reduction of necessity to essence appeals to the notion of ground. Hence, Fine would deny that an adequate statement of his reduction is the alternative claim that for all metaphysically necessary truths,  $p$ ,  $p$  is grounded in an essence-affirming proposition of some plurality or another. Contrast this with (Rosen, 2010, p. 121). Again, I am only considering Fine’s reduction in this chapter.

<sup>9</sup>The exception is (Simons, 1987, p. 143). Otherwise (Oliver and Smiley, 2016, p. 107) say, “the plural variables that are the norm in plural logic can take  $n$  values for every  $n \geq 1$ . . . Virtually all other authors that we are aware of [besides Simons] treat their plural variables in this. . . way.”

Consider the proposition *it is not the case that Socrates is identical to the Eiffel Tower*. Given the necessity of identity, this proposition is metaphysically necessary. That is, it is true in every possible world.

I think that this proposition is not identical to an essence-affirming proposition of any single individual.

Consider, for example, the real definition of Socrates. As Fine himself suggests, Socrates's real definition will not say anything about the Eiffel Tower (Fine, 1994, p. 5). And likewise, if the Eiffel Tower has a real definition, it will not say anything about Socrates. Hence, there is no essence-affirming proposition belonging either to Socrates or to the Eiffel Tower which is identical to the proposition *it is not the case that Socrates is identical to the Eiffel Tower*.

Thus, *it is not the case that Socrates is identical to the Eiffel Tower* cannot be identical to an essence-affirming proposition of Socrates nor to an essence-affirming proposition of the Eiffel Tower.

But some might suppose that *it is not the case that Socrates is identical to the Eiffel Tower* is identical to an essence-affirming proposition of some other individual.

Consider the set whose members are exactly Socrates and the Eiffel Tower. Perhaps *it is not the case that Socrates is identical to the Eiffel Tower* is an essence-affirming proposition of the set of Socrates and the Eiffel Tower.

Such a proposal is understandable. Suppose the real definition of this set is *the set of Socrates and the Eiffel Tower is set whose two members are Socrates and the Eiffel Tower*.

Now one essence-affirming proposition derived from this real definition is *the set of Socrates and the Eiffel Tower is such that Socrates and the Eiffel Tower are two*. And this proposition implies that it is not the case that Socrates is identical to the Eiffel Tower (given the necessity of non-identity). Perhaps Fine could then claim that *the set of Socrates and the Eiffel Tower is such that Socrates and the Eiffel Tower are*

*two* is identical to *it is not the case that Socrates is identical to the Eiffel Tower*.<sup>10</sup>

A similar proposal could be entertained by those who affirm the existence of mereological fusions. For again, the thought goes, it is essential to the mereological fusion of Socrates and the Eiffel Tower that it is a fusion of two individuals. Since these individuals are two, they cannot be identical to each other. Hence, perhaps *it is not the case that Socrates is identical to the Eiffel Tower* is identical to an analogous essence-affirming proposition of the mereological fusion of Socrates and the Eiffel Tower.

I will now show that these proposals are false. In addition, I will show that the only individuals who can have *it is not the case that Socrates is identical to the Eiffel Tower* as an essence-affirming proposition are Socrates or the Eiffel Tower.

Recall that an essence-affirming proposition of an individual,  $x$ , can be expressed by a sentence of the form ' $x$  is  $F$ .' Thus, if a proposition,  $p$ , can be expressed by a sentence of this form it must be at least partially about  $x$ .

So if  $p$  is an essence-affirming proposition of a set or a mereological fusion, it must be at least partially about a set or a mereological fusion.

Consider that on these proposals *it is not the case that Socrates is identical to the Eiffel Tower* is identical to a truth about a set or a mereological fusion. But *it is not the case that Socrates is identical to the Eiffel Tower* is not even partially about a set or a mereological fusion. Rather, the only individuals this truth is about are Socrates and the Eiffel Tower.

Hence, this truth cannot be identical to a truth about some other individuals, such as a set or a mereological fusion. Indeed, this truth cannot be identical to any truth about any individuals besides Socrates and the Eiffel Tower.

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<sup>10</sup>Some might say that the latter exists in worlds where Socrates and the Eiffel Tower do not exist (and *a fortiori*, where the set of Socrates and the Eiffel Tower does not exist), while the former only exists in worlds where Socrates and the Eiffel Tower (hence their set) exist. However, probably Fine's reduction implies that Socrates and the Eiffel Tower (hence their set) exist in all possible worlds. See fn. 5 of this chapter.

More generally, we can state the argument as follows. First, every essence-affirming proposition of  $x$  must be partially about  $x$ . This follows simply from my definition of an essence-affirming proposition, a definition I have derived from Fine's remarks. Second, the only individuals *it is not the case that Socrates is identical to the Eiffel Tower* is partially about are Socrates and the Eiffel Tower.

From these two claims, it follows that *it is not the case that Socrates is identical to the Eiffel Tower* can only be an an essence-affirming-proposition of Socrates or an essence-affirming proposition of the Eiffel Tower. So it cannot be an essence-affirming proposition of their set or their mereological fusion.

I think the only individuals *it is not the case that Socrates is identical to the Eiffel Tower* is partially about are Socrates and the Eiffel Tower. A person can fully understand that proposition without knowing anything about sets or mereological fusions.

Sometimes what is required to understand a proposition is not obvious to us. It might not be obvious that Cicero is identical to Tully. But anyone who knows who Tully is, knows who Cicero is, and knows about identity, must also know that Cicero is identical to Tully.

By contrast, someone who knows who Socrates is, knows what the Eiffel Tower is, and knows about identity does not need to know something about the set of Socrates and the Eiffel Tower or the mereological fusion of Socrates and the Eiffel Tower.

They do not need to know about these things because they do not even need to believe that such things exist in order for them to understand and affirm that it is not the case that Socrates is identical to the Eiffel Tower.

Recall that I showed that *it is not the case that Socrates is identical to the Eiffel Tower* is neither an essence-affirming proposition of Socrates nor an essence-affirming proposition of the Eiffel Tower. Since these are the only single individuals this proposition can be about, it follows that *it is not the case that Socrates is identical to the*

*Eiffel Tower* is not an essence-affirming proposition of any single individual.

I expressed Fine's reduction as follows: the metaphysically necessary truths are identical to the essence-affirming proposition of all objects whatever.

The proposition *it is not the case that Socrates is identical to the Eiffel Tower* is a metaphysically necessary truth. Hence, if Fine's reduction is true, this proposition is identical to an essence-affirming proposition. However, given the argument of this section, it cannot be an essence-affirming proposition of any single individual. So it must be an essence-affirming proposition of several individuals, taken together, namely, Socrates and the Eiffel Tower.

If there is an essence-affirming proposition of Socrates and the Eiffel Tower, then Socrates and the Eiffel Tower have some essential properties. Hence, several individuals have an essence. Hence, granted Fine's reduction, it follows that several individuals have an essence. Thus, if Fine's reduction is true, there are some collective essences.

Hence, I conclude that my first claim is true: if Fine's reduction is true, then there are some collective essences. A proponent of Fine's reduction must appeal to collective essences.

### 4.3 Against Collective Essence

In this section, I present my argument for the claim that there are no collective essences. I defend the premises of this argument, however, in the sections that follow.

Here is my argument:

- (1) For all  $xx$ , if there is a real definition of  $xx$ , then it is possibly the case that there is some thing or things that  $xx$  are identical to.
- (2) For all  $xx$  such that  $xx$  have more than one member, it is not possibly the case that there is some thing or things that  $xx$  are identical to.

∴ (3) For all  $xx$  such that  $xx$  have more than one member, there is no real definition of  $xx$ .

(3) implies that there are no collective essences. The essence of a plurality,  $xx$ , is a collective essence just in case  $xx$  have more than one member. Moreover, the essence of  $xx$  consists of all and only the properties mentioned in  $xx$ 's real definition. Hence,  $xx$  have a collective essence just in case  $xx$  have a real definition and  $xx$  have more than one member.

What I mean when I say that there are no collective essences is that pluralities with more than one member do not have an essence.

This claim could easily be confused with the claim that no pluralities have an essence. But that is not my claim. This is because, as noted in the previous section, most take pluralities to include individuals. Moreover, I think some individuals have an essence. Hence, I think that some pluralities have an essence.

However, I deny that individuals have more than one member. And so the claim that some pluralities have an essence is consistent with (3), so long as the pluralities in question are individuals (or pluralities with only a single member).

On the definitional conception of essence, it is apparent that the following slogan is true: no real definition, no essential properties. Moreover, another slogan is true: no real definition, no essence-affirming propositions.

For suppose that the plurality of Socrates and the Eiffel Tower do not have a real definition. Hence, there is no proposition which can be expressed by a sentence of the form 'Socrates and the Eiffel Tower are  $F$ ' where ' $F$ ' designates a property mentioned in the real definition of Socrates and the Eiffel Tower. On this supposition, they do not have a real definition. So they do not have any properties that are mentioned by their real definition. So there are no such properties for ' $F$ ' to designate.

I showed in the previous section that Fine's reduction implies that there are some essence-affirming propositions of Socrates and the Eiffel Tower. (3) is, thus, incon-

sistent with Fine's reduction. Hence, if my argument is sound, Fine's reduction is false.

In the remaining two sections, I defend the premises of this argument.

## 4.4 The Traditional Formula and the Modified Formula

In section 1.2, I noted that proponents of the definitional conception of essence generally agree that essence is somehow related to identity. Hence, Fine begins his article with the remark: 'For one of the central concerns of metaphysics is with the identity of things, with what they are.' (Fine, 1994, p. 1).

Fine here alludes to a common assumption, namely, that a description of the essence of an individual,  $x$ , answers a question: 'what is it to be  $x$ ?' That answer has the form '— is what it is to be  $x$ .' In section 1.3, I called this schema the traditional formula.

Moreover, I showed in section 1.2 that an adequate answer to the question 'what is it to be the singleton set of Socrates?', where this question is understood in Fine's sense, will fill in the blank in the traditional formula with a specification of  $x$ 's real definition.

Thus, the answer to that question is plausibly 'the set whose sole member is Socrates is what it is to be the singleton set of Socrates.'

This answer, according to Fine, tells us about the identity of the singleton set of Socrates. And indeed, the thought goes, answers to the question 'what is it to be  $x$ ?' always tell us about the identity of  $x$ , when questions of that form are understood in the right way.

In this section, I show that Fine's view on the relation between 'what it is to be' questions and real definition entails (1). Furthermore, I will show that even those

who have rejected this view should still accept (1).

Many, probably most, agree with Fine that the essence of an individual tells us ‘what it is to be’ that individual.<sup>11</sup> Let us say that **the first account** is the view that the terms ‘essence’ and ‘essential property’, as Fine uses them, have to do with what it is to be a thing or some things. **The second account** is the view that the terms ‘essence’ and ‘essential property’, as Fine uses them, have to do with a thing’s or things’ real definition.

The first and second accounts are not meant to be competing. Typically, proponents of these accounts suggest that they are somehow related. Thus, for example, Michael Glazier says,

Many philosophers have thought that there is also a sense in which even something nonlinguistic, such as an object or property, can be said to have a definition. These definitions are called “real” definitions. It is natural to state them using locutions like “what it is to be  $X$  is to be  $Y$ .” (Glazier, 2022, p. 18)

Furthermore, Penelope Mackie says that the following statements should be acceptable to all proponents of Fine’s reduction of necessity to essence: ‘[t]o specify the D-essence [definitional essence] of a thing is to give a real definition’, and ‘[a] real definition of a thing specifies *what that thing is*, or *what it is to be* that thing.’ (Mackie, 2020, p. 252)

Finally, in a recent collection, Kathryn Koslicki and Michael Raven confirm that,

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<sup>11</sup>In addition to Fine, see (Hale, 2002, p. 312–313) (Correia, 2006, p. 754), (Lowe, 2008, p. 34–35), (Lowe, 2012, p. 935), (Hale, 2013, p. 151), (Kment, 2014, p. 148), (Glazier, 2017, pp. 18–19), (Hale, 2018, p. 122), (Leech, 2018, p. 313), (Nutting et al., 2018, p. 139), (Tahko, 2018, p. 93), (Correia and Skiles, 2019, p. 648), (Romero, 2019, p. 126), (Teitel, 2019, p. 50), (Zylstra, 2019a, p. 1087–1088), (Correia, 2020, p. 281), (Mackie, 2020, p. 252), (Wallner and Vaidya, 2020, p. 422), (Bovey, 2021, p. 7721), (Leech, 2021a, p. 245), (Mallozzi, 2021, pp. S1941–S1942), (Passinsky, 2021, p. 942–943), (Vetter, 2021, p. 838), (Wildman, 2021, p. S1462), (Coates, 2022, p. 504), (Correia and Skiles, 2022, p. 1279), (Correia, 2024, p. 128), (Koslicki, 2024, p. 323), (Koslicki and Raven, 2024, p. 1).

A *statement* of the essence, or “real definition”, aims to tell us what it is to be the entity in question. . . . To illustrate, one might think that the statement (real definition), “Gold is the chemical element with atomic number 79”, captures the essence, or what it is to be, gold. (Koslicki and Raven, 2024, pp. 1–2)

In general, then, the default position is that the first and second accounts are compatible.

Moreover, as these authors suggest, there is a standard explanation of why they are compatible. Consider that in the above example, we answered the question ‘what is it to be the singleton set of Socrates?’ by appealing to properties in that singleton’s real definition. For plausibly, its real definition is *the singleton set of Socrates is the set whose sole member is Socrates*.

Thus, the crucial claim which demonstrates the compatibility of the first and second accounts is that a real definition of the singleton set of Socrates tells us what it is to be the singleton set of Socrates.

More generally, suppose a real definition is always capable of providing us an answer to questions of the form ‘what is it to be  $xx$ ?’ Then, there will never be a case where we have a real definition and hence an essential property that satisfies the second account but fails to satisfy the first. This, I take it, is the suggestion that these authors mean to make and which renders the first and second accounts compatible.<sup>12</sup>

This position on the compatibility of the first and second account has, however, a surprising consequence, which is best brought out by an example.

Consider that Ludwig Wittgenstein had many brothers. But Wittgenstein never had a twin brother. Still, there is a possible world where Wittgenstein had a twin brother. Call that world  $w$ , and call Wittgenstein’s twin brother in  $w$ , ‘Karl’.

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<sup>12</sup>For the converse (that what it is to be questions can always tell us about a thing’s or things’ real definition), see section 1.3.

Let us suppose that Karl exists in  $w$  but that Karl does not exist in the actual world. Moreover, suppose the singleton set of Karl only exists in worlds where Karl exists. Hence, the singleton set of Karl exists in  $w$ , but the singleton set of Karl does not actually exist.<sup>13</sup>

In just the same way that we can ask what it is to be the singleton set of Socrates, we can ask what it is to be the singleton set of Karl.

Recall that according to Fine, an answer to the question ‘what is it to be  $xx$ ?’ tells us about the identity of  $xx$ . This is why Fine begins his article by saying that ‘one of the central concerns of metaphysics is with the identity of things, with what they are.’ (Fine, 1994, p. 1)

The singleton set of Karl, on these assumptions, does not exist. Hence, it is not identical to anything. Hence, any answer we can give to the question ‘what is it to be identical to the singleton set of Karl?’ will fail to tell us about the identity of the singleton set of Karl.

Thus, we cannot give an answer to that question *when that question is understood in the way Fine understands it*. This is because when that question is understood in the way Fine understands it, it always tells us about the identity of something.

Suppose that a real definition of the singleton set of Karl is always able to tell us what it is to be the singleton set of Karl. Moreover, an answer to the question ‘what is it to be the singleton set of Karl’ always presupposes that the singleton set of Karl is identical to something. Thus, an answer to that question always presupposes that the singleton set of Karl exists.

Karl does not exist. Hence, on the above supposition, his singleton set does not exist. Hence, there is no answer to the question ‘what is it to be the singleton set of

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<sup>13</sup>Given necessitism, it follows that Karl exists in every possible world. As noted in fn. 6, Fine’s reduction probably entails necessitism. I am, however, only using this example to illustrate a more general claim: that it follows from the standard view of the compatibility of the first and second accounts that if there is a real definition of  $xx$ ,  $xx$  exist. This general claim does not entail Karl’s existence or non-existence.

Karl?’ A real definition of the singleton set of Karl is always able to tell us what it is to be the singleton set of Karl. But no real definition can do this when there is no answer to the question ‘what is it to be the singleton set of Karl?’ Hence, there is no real definition of the singleton set of Karl.

In general, suppose  $xx$  do not exist. Then, nothing is identical to  $xx$ . Then, we are not able to say what it is to be  $xx$ , on Fine’s understanding of these questions. Moreover, given the standard view on the compatibility of the first and second accounts, it follows that there is no real definition of  $xx$ .

Thus, in general, the standard view of the compatibility of the first and second accounts entails (with these assumptions) that there are only real definitions of individuals (one or many) that are identical to something. Hence, there are only real definitions of individuals (one or many) that exist.<sup>14</sup>

I said that we cannot give an answer to the question ‘what is it to be the singleton set of Karl’ when the singleton set of Karl does not exist. Moreover, I said that this follows from *the way Fine understands these questions*.

Suppose, however, that by the standards of ordinary usage, it makes sense to say that ‘the singleton set of Karl is the set whose sole member is Karl’ even in worlds where Karl does not exist.

We can make the supposition stronger. Let us suppose that not only does it make sense to give that answer in worlds where Karl does not exist, those answers are also true in worlds where Karl does not exist.

Both of these suppositions are consistent with the point I am making. For I am not making a claim about ordinary usage because Fine is not making a claim about ordinary usage. Fine’s claim is about how to answer these questions when these questions have bearing on the metaphysics of identity.

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<sup>14</sup>The standard view also follows from these claims. (i) A real definition of an individual  $x$  is a singular proposition that has  $x$  as a constituent, and (ii) a singular proposition can only have  $x$  as a constituent if  $x$  exists.

Perhaps, by the standards of ordinary usage, the correct answer to the question ‘what is it to be the singleton set of Karl?’ is ‘to be the set whose sole member is Karl is what it is to be the singleton set of Karl.’ If so, that fact has no bearing on the argument I am making. It would only show that Fine’s usage and the standards of ordinary usage come apart on such questions. I am describing (a consequence of) Fine’s view, and Fine gets to pick what his questions mean.

The general claim that I have shown to follow from the standard view of the compatibility of the first and second accounts is that only things that exist have real definitions (or essences).

Some philosophers have explicitly endorsed this conclusion, although it is not clear to me that they have done so on the basis of this argument. Indeed, typically they say this conclusion is obvious. Hence, Ross P. Cameron says, ‘I start to lose my grip on the notion of essence once non-existent things are said to have essences.’ (Cameron, 2010, p. 353)

Likewise, Boris Kment endorses a claim which he calls ‘Essence Requires Existence’. Here is his formulation of that claim:

The claim that it’s essential to  $e$  [an entity] that  $P$  [a proposition] logically entails the existence of  $e$  and of every entity mentioned in  $P$ s.

Kment then remarks that ‘I can’t do much better to justify Essence Requires Existence than to say that it seems to me to be obviously true.’ (Kment, 2014, p. 157)

Recall my (1).

- (1) For all  $xx$ , if there is a real definition of  $xx$ , then it is possibly the case that there is some thing or things that  $xx$  are identical to.

If having a real definition requires identity with some actual thing or things, then of course it follows that having a real definition requires identity with some possible

thing or things, since actuality implies possibility. So given this standard answer to the compatibility of the first and second accounts, it follows that (1) is true.

So far I have just described the standard view of the compatibility of the first and second accounts. But not everyone affirms this view nor do all affirm its consequence regarding real definition. E. J. Lowe, for example, says the following:

A real definition of an entity,  $E$ , is to be understood as a proposition which tells us, in the most perspicuous fashion, *what  $E$  is*—or more broadly, since we do not want to restrict ourselves solely to the essences of actually existing things, *what  $E$  is or would be*.<sup>15</sup>

I noted in the above that a crucial claim regarding the compatibility of the first and second accounts is that real definitions can always be expressed by an instance of the traditional formula: ‘— is it to be  $x$  (or  $xx$ ).’

Lowe’s remarks imply that this crucial claim is false.

Again, recall that Karl exists in  $w$  but not in the actual world and that the singleton set of Karl exists only in worlds where Karl exists. Hence, the singleton set of Karl possibly exists even though the singleton set of Karl does not actually exist. So the singleton set of Karl is, what is often called, a merely possible existent.

The singleton set of Karl is a merely possible existent. Nevertheless, there is an answer to the question ‘what would it be to be the singleton set of Karl?’ What it would be to be the singleton set of Karl would be to be the set whose sole member is Karl.

An answer to this question, according to Lowe, tells us about the real definition of the singleton set of Karl. Hence, the singleton set of Karl has a real definition, even though the singleton set of Karl does not exist.

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<sup>15</sup>(Lowe, 2012, p. 935). He says this again in (Lowe, 2013, p. 201–202). In saying that restricting ourselves to the real definitions of actually existing things would be a restriction, I take it that Lowe is suggesting the falsity of either (i) or (ii) in fn. 14. I assume this also in my remarks on his view. My defense of (1) is, however, neutral on this issue since it only assumes the disjunction of the standard view and Lowe’s view.

Lowe, apparently, agrees with Fine that an answer to the question ‘what is it to be  $xx$ ’ presupposes that something is identical to  $xx$ . Hence, there is no answer to this question in the case of merely possible existents. In the case of a possible existent, a real definition does not tell what it is to be that thing. Rather, on Lowe’s view, it only tells us what it would be to be that thing. Thus, some thing or things have a real definition even though the properties in that real definition do not tell us what it is to be that thing or those things.

Hence, Lowe’s view implies that the standard view of the compatibility of the first and second accounts is false.

In general, Lowe thinks that in the case of merely possible existents, there is an adequate answer to the question ‘what would it be to be  $x$  (or  $xx$ )?’ and that answers to this questions always tell us about the real definition of  $x$  (or  $xx$ ).

I will express the form of such an answer as follows: ‘— is what it would be to be  $x$  (or  $xx$ ).’ Call this **the modified formula**.

As with Fine, I do not think Lowe is making a claim about the ordinary usage of such questions. As with Fine, Lowe would say that answers to his question have bearing on the metaphysics of identity, though perhaps not the same bearing as answers corresponding to the traditional formula.

Instead of telling us about the identity of  $xx$ , instances of the modified formula tell us about conditions on identity with  $xx$ . If there can be conditions on identity with  $xx$  in worlds where  $xx$  does not exist, then it is not surprising that there are answers to the modified formula in such worlds. And if there are answers to the modified formula in such worlds, there are real definitions of  $xx$  in such worlds. Thus, in general, Lowe is committed to the claim that real definitions tell us about conditions on identity with  $xx$  in cases where those real definitions fail to tell us about identity with  $xx$ .

I now show that Lowe’s view also implies my (1).

Consider the question ‘what would it be to be a square circle?’ Lowe’s view implies that for there to be an answer to this question, there are conditions on identity with square circles. But there are no conditions on identity with square circles. That is why it is impossible for anything to be identical to a square circle. Hence, there are no real definitions of square circles.

More generally, Lowe’s view implies the following: every real definition can be adequately expressed by either the traditional formula or the modified formula, where these formulas are understood in the intended sense. If it is impossible for  $xx$  to be identical to anything, then  $xx$  do not have a real definition that can be expressed by either the traditional formula or the modified formula, where these are understood in the intended sense.

Thus, both views imply that all real definitions of a thing or things are real definitions of a possible thing or thing.

Hence I have shown that the standard view on the relation between ‘what it is to be’ questions and real definition entails (1). And I have shown that even those who have rejected this assumption should still accept (1). Thus, I conclude that (1) is true.

## 4.5 Collective Essence and Identity

Recall (2).

- (2) For all  $xx$  such that  $xx$  have more than one member, it is not possibly the case that there is some thing or things that  $xx$  are identical to.

Consider a plurality with more than one member, such as Socrates and the Eiffel Tower. Given (2), Socrates and the Eiffel Tower are not identical to any thing nor are they identical to several things.

In saying that Socrates and the Eiffel Tower is not identical to any thing or things, I mean to say that Socrates and the Eiffel Tower do not bear the identity relation to any thing or things. In other words, (2) is a claim about metaphysics: it denies that some relation obtains. It is not a claim about ordinary usage.

David Lewis once said that identity is “the one-one relation that each thing bears to itself and to nothing else.” (Lewis, 1991, p. 84)

I agree with Lewis. Identity is a one-one relation that each thing bears to itself and to nothing else. To say that there is an identity relation that Socrates and the Eiffel Tower bear to Socrates and the Eiffel Tower is to deny that identity is a one-one relation. It is to say instead that it is sometimes a many-many relation.

If identity is not a many-many relation, it is false that Socrates and the Eiffel Tower bear the identity relation to some thing or things. Thus, if I can show that identity is a one-one relation, (2) follows.

My arguments for the claim that identity is a one-one relation will primarily be aimed at showing that identity is not a many-many relation. However, before I give those arguments, I should begin by noting that few think that identity is a one-many (or many-one) relation.

Some have advocated a view called **composition as identity** which says that composite objects are ‘identical’ to their parts. Thus, for example, proponents of this view agree that a statue is composed of many parts: a statue head, a statue body, and so forth. The head and body are several things, and the statue is one thing. But they will add that, in some sense, the statue is ‘identical’ to its head, body, and other parts.

Megan Wallace, who defends this view, summarizes its status among material object metaphysicians in the following remarks:

Composition as identity (in any of its varieties) is not a popular view. In fact, opponents to CI so extensively out-number its proponents that it is

curious why so much ink is spilled arguing against a view that is so rarely endorsed or defended. (Wallace, 2011, p. 807)

This is because, as Wallace notes, most of these philosophers endorse the following argument. If a thing is one, that thing is not two (or more). One is one and not more than one. But many are more than one and not one. Hence, by the indiscernibility of identicals, it cannot be that one is many.

Like most, I endorse this argument. And for this reason, I think that we should not accept composition as identity, nor any view which implies that one is also many.

Many proponents of this view of composition as ‘identity’ would not say that the statue is *literally* identical to its body. For example, recall that Lewis said that identity is the one-one relation that each thing bears to itself and to no other. However, Lewis endorsed composition as ‘identity’. But in saying this, he clarified that his view only implies that mereological relations are “strikingly analogous to ordinary identity.” (Lewis, 1991, p. 84).

(2) is not a claim about relations that are strikingly analogous to identity. So it is consistent with Lewis’s version of composition as ‘identity’.

I now show that identity is not many-many. I have two arguments for this claim.

My first argument begins by agreeing that we can use identity language to say things like ‘Socrates and the Eiffel Tower are identical to Socrates and the Eiffel Tower.’ Suppose that this sentence is true. If so, I think a sufficient explanation of this truth points out that Socrates is identical to Socrates and the Eiffel Tower is identical to the Eiffel Tower.

This explanation is sufficient to explain why Socrates and the Eiffel Tower are identical to Socrates and the Eiffel Tower in the sense that no further explanation is required for the latter to be true.

Thus, I am not begging the question when I say that this conjunction ‘Socrates is identical to Socrates and the Eiffel Tower is identical to the Eiffel Tower’ is sufficient

to explain why Socrates and the Eiffel Tower are identical to Socrates and the Eiffel Tower.

Sometimes, there are more explanations for a truth than are required. Maybe some person in human history has simultaneously died from a gunshot wound and from a heart attack. This is possible. Thus, the claim that the gunshot wound is sufficient to explain that person's death does not presuppose that a heart attack is not also sufficient.

Even so, I think we are justified in believing that this is not typically the case. Generally speaking, when there are two sufficient explanations of a truth, we are justified in rejecting one of them.

I do not think that a proponent of the claim that identity is a many-many relation would deny my claim that Socrates's being identical to Socrates and the Eiffel Tower's being identical to the Eiffel Tower is sufficient to explain the truth of 'Socrates and the Eiffel Tower are identical to Socrates and the Eiffel Tower'.

Moreover, I take it that they would say that their claim that there is a further, many-many relation of identity holding between Socrates and the Eiffel Tower and themselves is also a sufficient explanation of the truth.

Thus, supposing that there is a many-many relation of identity holding between Socrates and the Eiffel Tower and themselves, it follows that there are two sufficient explanations for the truth 'Socrates and the Eiffel Tower are identical to Socrates and the Eiffel Tower.' The same, of course, would hold for any true identity statement regarding a plurality with more than one member. There would always be two sufficient explanations for these truths.

Generally speaking, when there are two sufficient explanations of a truth, we are justified in rejecting one of them. On this view, there are two sufficient explanations of each truth about the identity of pluralities. Hence, I think we are justified in rejecting one explanation in each of those pairs. Since it shouldn't be the explanation

appealing to the identities of the individuals, taken individually, it should be the explanation appealing to the identity of several individual, taken together.

This concludes my first argument for identity's being one-one.

My second argument for identity's being one-one begins by having us consider the following claim: 'Socrates or the Eiffel Tower is identical to Socrates or the Eiffel Tower.'

This claim is surely true. Moreover, consider a world,  $w$ , where Socrates exists, but the Eiffel Tower does not exist. In  $w$ , this claim is still true. Moreover, it is true in  $w$  for the following reason: Socrates is identical to Socrates or the Eiffel Tower is identical to the Eiffel Tower.

In the actual world, it is true that Socrates or the Eiffel Tower are identical to Socrates or the Eiffel Tower. And I take it that the reason for this is the same as the reason we gave in  $w$ : Socrates is identical to Socrates or the Eiffel Tower is identical to the Eiffel Tower.

I think it would be arbitrary to hold that in our world there is also now a further explanation, namely, that a many-many relation of identity holds between Socrates and the Eiffel Tower and Socrates and the Eiffel Tower.

But if there is a many-many relation holding between Socrates and the Eiffel Tower and Socrates and the Eiffel Tower, then there is a further reason for the truth of 'Socrates is identical to Socrates or the Eiffel Tower is identical to the Eiffel Tower.' After all, if there is a many-many relation of identity holding between Socrates and the Eiffel Tower, surely this is relevant to the fact that Socrates or the Eiffel Tower are identical to Socrates or the Eiffel Tower.

However, I think that to suppose that there is this further explanation is arbitrary. It is arbitrary because we are supposing there to be an additional explanation to the one we already had in  $w$ . Hence, I deny that there is a many-many relation of identity that holds between Socrates and the Eiffel Tower and Socrates and the Eiffel Tower.

This concludes my second argument for the claim that identity is one-one.

If these arguments for are successful, they show that identity is a one-one relation.

Moreover, they are sufficient to show that (2) is true given that a plurality has the same members in every world in which that plurality exists.<sup>16</sup> For consider that Socrates and the Eiffel Tower have more than one member. Given my argument that identity is one-one, it follows that for them to be possibly identical to some thing or things, they must be identical to a single individual. If so, there is a possible world where they do not have more than one member. For an individual is not a plurality with more than one member. But this contradicts the assumption that a plurality have the same members in every world in which that plurality exists.

The argument generalizes. In general, if  $xx$  have more than one member, then given my argument that identity is one-one, it follows that for  $xx$  to be identical to some thing or things, they must be identical to a single individual. If so, there is a possible world where they do not have more than one member. It is impossible for  $xx$  to have different members in different worlds. Hence, there is no possible world where  $xx$  are identical to a single individual.

Thus, given my argument that identity is one-one and given that a plurality has the same members in every world in which that plurality exists, (2) follows.

This concludes my arguments for (2).

I think that sometimes we engage in loose ‘identity-speak’: there are ‘identical’ twins. In engaging in such loose ‘identity-speak’ I think we sometimes speak truly. I think it is true that there are identical twins.

If someone were to say to me that Socrates and the Eiffel Tower are identical to Socrates and the Eiffel Tower, I would think that what they are saying is true. That’s because I think this is an instance of loose identity speak. But I am a cautious person, and so just in case, I’d probably ask them whether they are saying the same thing as

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<sup>16</sup>This view is defended in (Linnebo, 2016) and (Williamson, 2016).

Socrates is identical to Socrates and the Eiffel Tower is identical to the Eiffel Tower.

Suppose, however, that I am wrong in thinking that an ordinary utterance of this sentence is true. All that would show is that sometimes ordinary usage is not a good guide to metaphysics. For (2) is not a claim about ordinary usage. It is a claim about when the identity relation obtains.

In some systems of plural logic, plural terms are allowed to flank an equals sign. And moreover, the resulting statements are sometimes true.<sup>17</sup> Thus, in these systems, some statements of the form ' $a = b$ ' are true when ' $a$ ' and ' $b$ ' are plural terms. The standard account of the truth conditions for such statements is as follows: when ' $a$ ' and ' $b$ ' are plural terms ' $a = b$ ' is true just in case  $a$  and  $b$  have all the same members (that is, when  $a$  and  $b$  are coextensive).

These systems of plural logic probably do not represent the consensus view about how to treat plural identity among plural logicians. For according to Øystein Linnebo, "[t]here is probably no consensus on whether the identity predicate can be flanked by plural terms'. (Linnebo, 2014, fn. 1)

Even so, some may think that because of these logics, we should reject (2). For I am opposed to these logics when I deny that identity is many-many. And a view that is opposed to logic should be rejected.

I agree that probably some proponents of these systems regard them as (i) literally correct and (ii) as implying that identity is a many-many relation.

Sometimes opposing a logic is not bad. Some are opposed to the claim that there are true contradictions. If you say that, then by the standards of this objection, you are opposed to some logics (shame on you!).

However, I do not think it is bad of you to do this. Can one legitimately oppose the logics that say there are true contradictions? I think so. Indeed, I think the way one should oppose these logics is the same way one opposes any philosophical view:

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<sup>17</sup>See, e.g., (Oliver and Smiley, 2016, pp. 108–111).

by giving good reasons to deny their claims.

I think I have given good reasons to deny that identity is many-many. So I think that if it is true that I oppose these logics for these reasons, so much the worse for them.

I said that probably some proponents of these systems regard them as implying that identity is a many-many relation. But probably some don't. Probably some people use these system while disavowing the claim that they are doing metaphysics when they 'treat' or 'model' identity as a many-many relation.

Some logicians treat one-one identity as if it were membership in an ordered pair of an individual and itself: 'Socrates is identical to Socrates' is satisfied in a model just in case Socrates is a member of the ordered pair of Socrates and Socrates in that model.

One can agree that that is a tidy, elegant, or convenient way of 'modeling' identity in first-order logic. But I would not say that one's preference for such systems invariably requires one to say that one-one identity just is membership in an ordered pair of an individual and itself.

Plural logics that treat identity as many-many generally say that it is the relation of sameness of membership among plurals, as I noted. One can agree that that is a tidy, elegant, or convenient way of 'modeling' identity in plural logic. But it does not invariably require one to say that identity is many-many.

Thus, I think that one can continue to enjoy, guilt free, one's favorite plural logic and also agree with the arguments of this section.

I have shown that (1) and (2) are true. Thus, I have shown that my argument is sound: there are no collective essences. Given that Fine's reduction entails the standard interpretation, Fine's reduction entails that there are some collective essences. Hence, I conclude that Fine's reduction is false.

# Chapter 5

## Essence and the Identity of Persons

### 5.1 Sortal Dependency and Real Definition

Individuals belong to kinds. And many individuals remain in existence from one time to another. A common view ties these facts together. Hence, it is sometimes said that an individual's criteria of identity over time or the facts about its persistence are dependent upon or are constitutive of its kind. Call this **the sortal dependency thesis**.

David Wiggins affirms the sortal dependency thesis when he says,

[I]t seems that an account of what  $x$  is and the specification of the principle of individuation of  $x$  are two aspects of one and the same thing; and we can expect that, for every completely determinate continuant, there will be at least one sortal concept that it falls under and that determines a principle of persistence for it. (Wiggins, 1980, p. 60)

Wiggins's view is probably the majority opinion, particularly among those concerned with issues of personal identity. Hence, Eric Olson calls it "a general theory, or part of a theory, of individuation and kinds that most philosophers seem to accept." (Olson,

1997, p. 28)<sup>1</sup>

I think most philosophers writing on the issue of personal identity would affirm the sortal dependency thesis. In this chapter, I argue that given that affirmation, one should also say that a human person's criteria of identity over time or the facts about its persistence are dependent upon its real definition.

More exactly, I will argue that if we are justified in believing that the sortal dependency thesis is true, we are justified in believing that a human person's criteria of identity over time or the facts about its persistence are dependent upon its real definition.

Real definitions are not the products of human convention. Thus, given that the criteria of identity over time or facts about a human person's persistence are dependent upon its real definition, the view that criteria of identity over time or facts about a human person's persistence are the products of human convention is false. Hence, a further consequence of my argument will be that proponents of the sortal dependency thesis must reject conventionalist views of personal identity over time.

My argument assumes the sortal dependency thesis. I believe that thesis is true, but I will not argue for its truth. However, since most accept the sortal dependency thesis, it will bear on the views of most who write on issues of personal identity.

My argument can be stated simply. Consider a particular human person, such as Socrates:

- (1) If the sortal dependency thesis is true, then for any persistence-determining kind, *K*, to which Socrates belongs, Socrates's belonging to *K* explains his

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<sup>1</sup>See, e.g., (Locke, 1689, II xvii 9), (Quine, 1950, pp. 67–68), (Hirsch, 1976, pp. 375–376), (Hirsch, 1982, pp. 34–71), (Parfit, 1984, p. 202), (Nagel, 1986, pp. 37–43), (Lowe, 1989a, p. 25), (Dummett, 1991, p. 183), (Van Inwagen, 1997, pp. 317–318), (Zimmerman, 1998, p. 285), (Baker, 2000, p. 37), (Hawley, 2001, p. 39), (McMahan, 2002, pp. 6–7), (Shoemaker, 2006, p. 42), (Thomasson, 2007, pp. 55–62), (Perry, 2008, pp. 7–12), (Lowe, 2009, pp. 12–28), and possibly (Snowdon, 2009, p. 271). (Merricks, 1998, p. 111) calls it 'the standard view', and this seems also to be the presupposition of (Sider, 2001, pp. 198–199) and (Grandy and Freund, 2023, pp. 1–2). (Mooney, 2023, pp. 725–727) only denies that substance sortals are persistence-determining, but he affirms that phase sortals are persistence-determining.

having his criteria of identity over time or his persistence profile.

(2) Socrates's satisfying his real definition explains Socrates's belonging to some persistence-determining kind.

∴ (3) If the sortal dependency thesis is true, Socrates's satisfying his real definition explains his having his criteria of identity over time or his persistence profile.

[(1), (2), transitivity of explanation]

My reasons for the premises of this argument do not rely on any features peculiar to Socrates. Hence, the argument generalizes to all human persons.

I will in the subsequent section explain the terms 'persistence-determining kind' and 'persistence profile'. An understanding of these terms, however, requires a more detailed articulation of the sortal dependency thesis, which I provide in section 5.2.

The validity of the argument requires the transitivity of explanation. I have already assumed this in another place (section 1.5). Since I am now applying those claims in a more controversial setting, it is worth saying something about my use of it here.

That explanation is transitive is the orthodox view. More exactly, the orthodox view says pick any type of explanation you want. It can be causal, scientific, metaphysical, mathematical, or something else. For any given type of explanation we have a claim of the form '*p* t-explains *q*'. Then, transitivity says if *p* t-explains *q* and *q* t-explains *r*, *p* t-explains *r*.

This is the orthodox view.<sup>2</sup> It is not the universal view. Some challenges to the orthodox view are specific to certain types of explanation, the most notorious of these being causal explanation. But some have, for related reasons, challenged the

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<sup>2</sup>For its orthodoxy in causation see (Lewis, 2004, pp. 96–99) and (Paul and Hall, 2013, p. 215). For its orthodoxy in metaphysical explanation see (Schaffer, 2012, pp. 124–126), who also challenges the orthodoxy (Schaffer assumes grounding and metaphysical explanation always go together). For responses to Schaffer, see (Raven, 2013) and (Litland, 2013). (Schnieder, 2011, p. 451) notes some controversy around the claim but assumes it for his general logic of because-statements.

transitivity of metaphysical explanation.

It would take me too far afield to defend the orthodox view from all these challenges and in addition to provide my own reasons for it. I will, however, mention one challenge and say why it doesn't affect my argument.

Susan was arrested because she stole a bike. Susan stole a bike because she preferred them to the skis. Allegedly, however, it is false that Susan was arrested because she preferred the bike to the skis.<sup>3</sup> After all, she would have been arrested if she stole the skis too.

A more sophisticated version of the transitivity of explanation would preserve transitivity just in case we flesh out the contrasts. For when we flesh out the contrasts in this case, we can easily see the problem.

Susan stole a bike *rather than not* because she preferred the bike to the skis *rather than not*. That's true. The thought being that had she not preferred the bike to the skis, she would have stolen the skis.

Susan was arrested *rather than not* because she stole a bike *rather than not*. That's false. The thought being that had she not stolen a bike, she would have stolen the skis and been arrested.

So the argument appealing to transitivity when the contrasts are fleshed out is simply unsound, rather than invalid.

We could formulate a version of the transitivity of explanation that is suitably qualified to contrastive statements. Others have done this.<sup>4</sup> But the important point, for my argument, is a more restricted one. It's just that fleshing out the contrasts in my example does not reveal any problems.

Socrates's satisfying his real definition *rather than not* explains Socrates's belonging to some persistence-determining kind *rather than not*. For if he did not satisfy his real definition, he wouldn't exist and *a fortiori* not belong to some persistence-

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<sup>3</sup>This case is derived from (Hitchcock, 1996, pp. 275–277).

<sup>4</sup>See (Schaffer, 2012, pp. 134–138) for one such formulation.

determining kind.

Socrates's belonging to some persistence-determining *rather than not* explains his having his criteria of identity over time or persistence profile *rather than not*. For the thought goes (see section 5.2), criteria of identity and persistence profile and general are had entirely in virtue of belonging to some kind.

So it follows that Socrates's satisfying his real definition *rather than not* explains his having his criteria of identity over time or persistence profile *rather than not*. And this is the way my argument should be read for those who have this concern about the transitivity of explanation.

This is sufficient to satisfy the most common and serious concern about the transitivity of explanation.

## 5.2 The Sortal Dependency Thesis

In this section, I provide a more detailed articulation of the sortal dependency thesis. Once that is done, I will show that (1) follows from the sortal dependency thesis.

I will suppose that a **sortal concept** is just a concept under which some kind (natural or non-natural) falls. The term **sortal** I use as interchangeable for the term 'kind' (natural or non-natural).<sup>5</sup> In general, however, I will prefer the term 'kind' to the term 'sortal'.

As we've seen, Wiggins says in his affirmation of the sortal dependency thesis that "at least one sortal concept that [a continuant] falls under. . . determines a principle of persistence for it." (Wiggins, 1980, p. 60)

Thus, one might think that Wiggins is claiming either that sortals are concepts or that the sortal dependency thesis is a claim about our concepts determining a thing's criteria of identity over time or facts about its persistence, rather than a claim about

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<sup>5</sup>'Sortal' originates in (Locke, 1689, III iii 15). It is frequently used ambiguously, as noted in (Grandy and Freund, 2023, p. 11), for it can mean either a universal, a kind, a concept, or a predicate.

a thing's kind determining that thing's criteria of identity over time or facts about its persistence.

However, according to Wiggins, "a sortal concept is what a sortal predicate stands for." (Wiggins, 1980, p. 8) And in later years, he clarifies that "'horse' stands for that which Victor is and Arkle is [individual horses]." (Wiggins, 2001, p. 10)

Victor and Arkle are horses. Hence, it would seem that Wiggins understands the predicate 'is a horse' to stand for the kind horse and not for something in our heads. And since a sortal concept is, also, what a sortal predicate stands for, it follows that the sortal concept of a horse is just the kind horse itself.

Hence, it is erroneous to infer from Wiggins's use of the term 'sortal concept' that it is the way we think about things that determines an individual's criteria of identity over time or facts about its persistence.

We could restate Wiggins's view in this way: We pick out a kind in virtue of having a concept of that kind. But it is the kind itself, and not our concept of that kind, that determines the 'principle of persistence' of the individuals belonging to that kind.

I think that a 'principle of persistence' for Wiggins is what others call a 'criterion of identity over time'.<sup>6</sup> Thus, I would prefer to state Wiggins's affirmation of the sortal dependency thesis as follows: some kind to which an individual belongs determines its criteria of identity over time.

Wiggins's affirmation of the sortal dependency thesis does not, however, specify which kind determines an individual's criteria of identity over time, and he is open to the idea that an individual may belong to several kinds all of which determine its criteria. The only condition he adds is that these kinds cannot determine different criteria for the same individual.<sup>7</sup>

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<sup>6</sup>Wiggins confirmed this reading in personal correspondence with Mackie. See (Mackie, 2006, p. 143, fn. 20).

<sup>7</sup>(Wiggins, 1980, pp. 64–65), (Wiggins, 2001, pp. 66–67).

Thus, Wiggins could say that the kind human (if it is a kind) and the kind organism (if it is a kind) both specify Socrates's criteria of identity over time, subject only to the condition that these distinct kinds cannot determine distinct criteria of identity over time. For if they determined distinct criteria, there would be a case in which the individual can persist and also in which that individual cannot persist, which is impossible.

I call the kinds that determine an individual's criteria of identity over time or that individual's persistence profile its **persistence-determining kinds**.

As with Wiggins, I will not assume that an individual has only one persistence-determining kind.

Furthermore, I will not assume that if a kind,  $K$ , is a persistence-determining kind for some individual that belongs to  $K$ ,  $K$  is a persistence-determining for all individuals who belong to  $K$ .

Lynne Rudder Baker believes that the statue, Goliath, and the lump of clay from which it is made, Lump1, both belong to the kind statue. But Baker adds that while the kind statue is persistence-determining for Goliath, it is not persistence-determining for Lump1 (Baker, 2000, pp. 56–59).<sup>8</sup>

This example is controversial, since it is controversial whether Goliath and Lump1 are non-identical.<sup>9</sup> Nevertheless, my only claim is that the sortal dependency thesis is consistent with such a view.

I will assume that the **criteria of identity over time** for an individual,  $x$ , at least specify, for all individuals  $y$  and times  $t$  and  $t'$ , some necessary and sufficient conditions for when  $x$  at  $t$  is identical to  $y$  at  $t'$ .

Criteria of identity cannot, however, just be necessary and sufficient conditions for identity over time. Thus, Trenton Merricks says,

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<sup>8</sup>(Morris, 1986, pp. 33–46) gives another example of a kind that is persistence-determining for some but not all of its members.

<sup>9</sup>For discussion of the controversy, see (Bennett, 2004).

[N]ecessary and sufficient conditions for identity over time are criteria only if one can, at least in principle, assert that they are satisfied without presupposing identity for which they are said to be criteria. In other words, they can be used to illustrate that criteria of identity over time are *informative* necessary and sufficient conditions for identity over time. (Merricks, 1998, p. 107)

Merricks later clarifies that “the notion of ‘presupposing’ is epistemic,” (Merricks, 1998, p. 107) even though criteria of identity over time are not necessarily the basis of our justified beliefs in an individual’s identity over time.

I understand Merricks’s informativeness condition on criteria of identity over time to entail the following. Suppose that  $C$  are the criteria of identity over time for  $a$ . Moreover, suppose  $a$  at  $t$  is identical to  $b$  at  $t'$ . Then it is possible for there to be a good argument from  $C$  to the claim that  $a$  at  $t$  is identical to  $b$  at  $t'$ . A circular argument is a bad argument. So if it is necessarily the case that an argument from  $C$  to the claim that  $a$  at  $t$  is identical to  $b$  at  $t'$  is circular, then  $C$  cannot be the criteria of identity over time for  $a$ .

So understood, Merricks’s informativeness condition is epistemic in the sense that when an alleged criterion  $C$  is genuine, a person who based their belief that  $a$  at  $t$  is identical to  $b$  at  $t'$  upon an argument from  $C$  could have a good basis for that belief. By contrast, if that argument from  $C$  were circular, that person could not have a good basis for their belief that  $a$  at  $t$  is identical to  $b$  at  $t'$ .

Thus, Merricks’s informativeness condition is primarily a non-circularity condition. Like Merricks, I affirm that criteria of identity over time cannot be circular in this way.

Merricks denies that individuals have informative necessary and sufficient conditions over time. Hence, his view entails that no individuals have criteria of identity over time. This view is sometimes called **non-criterialism**. By contrast, the view

that all individuals have criteria of identity over time I will call **criticalism**.

If non-criticalism is true and if the sortal dependency thesis implies that an individual's criteria of identity over time are determined by its persistence-determining kind, then the sortal dependency thesis is false. If an individual has no criteria of identity over time to be determined, then obviously its persistence-determining kinds don't determine its criteria.

Although I think that Wiggins endorses the claim the criteria of identity over time for an individual depend upon its persistence-determining kind, I do not think this position of Wiggins's is essential to the sortal dependency thesis. As I understand it, the sortal dependency thesis is consistent with non-criticalism.<sup>10</sup>

Consider, for example, that Wiggins himself says,

The real and abiding interest of Frege's demand for the criterion of identity seems to me to be this: wherever we suppose that entities of kind *f* exist we are committed to ascribing some point to typical identity questions about particular *fs*. (Wiggins, 1980, p. 53), (Wiggins, 2001, pp. 60–61)

That point, according to Wiggins, then “makes manifest the connexion. . . between its existence and the kind of thing it is.” (Wiggins, 1980, pp. 54–55), (Wiggins, 2001, p. 61)

On a standard reading, Frege demanded a kind-relative criterion and not merely some criterion or another.<sup>11</sup> So his demand assumed the sortal dependency thesis. So *a fortiori* Wiggins is speaking to the real and abiding interest of the sortal dependency thesis in these remarks.

I think that Frege's demand (according to Wiggins) works like this. Suppose *a*

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<sup>10</sup>In saying this, I do not mean to suggest that the sortal dependency thesis is consistent with everything that motivates Merricks's non-criticalism, however.

<sup>11</sup>See (Lowe, 1989b, p. 5). Wiggins seems to have this in mind too when he refers to a criterion as an account of what “*constitutes* identity” (Wiggins, 1980, p. 53) and in later years referred to as “the constitutive sense of ‘criterion’ in which Frege asked for such a criterion.” (Wiggins, 2001, p. 60).

belongs to a kind  $K$  and that one asks, ‘why is  $a$  at  $t$  identical to  $b$  at  $t'$ ?’ One can demand an answer to that question, and that answer must appeal to facts about  $K$ .

I think one can satisfy this demand even if there are no informative necessary and sufficient conditions on  $a$ ’s identity over time.

If so, then we have captured the “real and abiding interest of Frege’s demand for the criterion of identity.” And I take it that if a view captures the “real and abiding interest” of Frege’s demand, then Wiggins would say that such a view entails the sortal dependency thesis.

Suppose non-criterialism is true. Merricks would then say that there are no informative necessary and sufficient conditions  $a$ ’s identity over time. These would not be ‘informative’ in the sense of their being circular. Nevertheless, I think that such conditions can still feature in answers to typical questions about why an individual persists in certain circumstances.

Suppose that at  $t$  Socrates is hatless. But then at  $t'$  he is behatted. I think we can confidently assume that Socrates persists from  $t$  to  $t'$ . And so hatless Socrates exists at  $t$ ; behatted Socrates exists at  $t'$ ; and hatless Socrates is identical to behatted Socrates.

Consider the question ‘why did Socrates persist from  $t$  to  $t'$ ?’ I think one plausible answer to this question appeals to facts about the kind to which Socrates belongs. Socrates belongs to a kind that is not destroyed by the donning of a hat.

None of the kinds to which Socrates could plausibly be said to belong are destroyed by the donning of a hat. Humans are not; persons are not; souls are not; and so forth. There are facts about the kinds of circumstances that humans, persons, souls can persist through. And it is a fact that one of these circumstances is the donning of a hat.

Let us suppose that we cannot specify, without circularity, the types of cases that, say, Socrates persists through. Nevertheless, the types of cases that Socrates can

persist through are the types of cases that a human person can persist through. And the reason Socrates can persist through the types of cases that a human person can persist through is surely because he is a human person.

The sortal dependency thesis says that it is not a coincidence that Socrates has the persistence profile of a human person (assuming he in fact has that persistence profile). He has that persistence profile because he is a human person.

Suppose our answer to a question about Socrates's persistence will inevitably be circular. Nevertheless, it could still appeal to a kind to which Socrates belongs (if not human person, then perhaps some other kind). If so, then a fact about a kind to which Socrates belongs features in answers to typical identity questions about Socrates. And so on non-criterialism, we still retain the real and abiding interest of the sortal dependency thesis.

More exactly, let us say that a continuant,  $x$ , has the **persistence profile of a  $K$**  just in case every type of case that  $x$  persists through is a type of case that a  $K$  persists through.

On non-criterialism, then, the sortal dependency thesis should be understood as the claim that questions about the persistence of some continuant will appeal to facts about the types of cases that  $K$ s persist through, where  $K$  is some persistence-determining to which that continuant belongs.

Thus, the sortal dependency thesis is consistent with non-criterialism. For the non-criterialist, if the sortal dependency thesis is true, then some facts about the persistence of an individual depend upon that individual's having the persistence profile of a  $K$ . And this in turns depends on that individual's being a  $K$ .

The sortal dependency thesis invokes a claim to "dependency," "determination," or something like that. We've seen, however, that Wiggins takes the "real and abiding interest" of the sortal dependency thesis to be in that it entails that facts about the kind to which an individual belongs answer questions about why that individual

persists.

An explanation is an answer to a why-question. Thus, the “dependence” or “determination” in question I take to at least be a kind of explanation entailing dependence or determination.

Recall, now, my first premise:

- (1) If the sortal dependency thesis is true, then for any persistence-determining kind,  $K$ , to which Socrates belongs, Socrates’s belonging to  $K$  explains his having his criteria of identity over time or his persistence profile.

It follows from the sortal dependency thesis that for all continuants,  $x$ , and persistence-determining kinds to which  $x$  belongs,  $K$ ,  $x$ ’s belonging  $K$  explains  $x$ ’s criteria of identity over time or its persistence profile. Since, Socrates is a continuant, it follows that (1) is true. A premise analogous to this could, of course, be given for all human persons, given that all human persons are continuants.

It’s worth keeping in mind the following. I assume that if Socrates does not have criteria of identity over time, then Socrates’s belonging to his persistence-determining kinds cannot explain his criteria of identity over time. After all, in such a case, there is nothing to explain.

In such a case, it follows from (1) that if the sortal dependency thesis is true, Socrates’s belong to his persistence-determining kinds explains his persistence profile.

However, supposing Socrates has criteria of identity over time, it follows that he also has a persistence profile. In that case, (1) does not strictly entail that Socrates’s belonging to his persistence determining kinds explains his criteria of identity over time.

Nevertheless, that is what most would assume. And I will assume that also going forward. This will not play a crucial role in my argument. But it will make some of what I say more natural to proponents of the sortal dependency thesis.

Thus, I conclude that (1) is true, since it follows from the sortal dependency thesis.

### 5.3 Necessity and Kind-Membership

Recall my second premise:

- (2) Socrates's satisfying his real definition explains Socrates's belonging to some persistence-determining kind.

Thus, suppose that the persistence-determining kind in question is the kind human person. It follows from my second premise that the fact that Socrates satisfies his real definition explains why Socrates is a human person.

Some might say that Socrates belongs to many persistence-determining kinds besides this one. For example, it might be said that human person and organism are both persistence-determining kinds of Socrates.

It is plausible that if Socrates's satisfying his real definition explains Socrates's belonging to the kind human person, it also explains his belonging to the kind organism. One could maintain, for example, that Socrates is an organism because he is a human. If so, then the fact that Socrates's satisfying his real definition explains his being a human, which in turn explains his being an organism. Therefore, by the transitivity of explanation, his satisfying his real definition explains his being an organism.

But perhaps Socrates's belonging to some other persistence-determining kind is not explained by his satisfying his real definition. For example, suppose you think that the kind person is a conventional kind. And moreover, Socrates's belonging to a conventional kind is not explained by his satisfying his real definition, even though his belonging to the natural kind human is.

Thus, on this view, Socrates's satisfying his real definition explains his membership in some persistence-determining kinds even satisfying that real definition does not explain Socrates's membership in all of his persistence-determining kinds.

This view is consistent with (2). And it is consistent with the argument of this

chapter. For again, my argument concludes that the sortal dependency thesis entails that Socrates's criteria of identity over time or persistence profile is explained by his satisfying his real definition. But my argument does not conclude that there is only one such explanation.

Hence, so long as at least one persistence-determining kind is explained by Socrates's satisfying his real definition, my conclusion follows, given the transitivity of explanation. For then there would be at least one explanation of Socrates's criteria of identity over time or his persistence profile that appeals to his real definition.

For the sake of my argument for (2), I will suppose that one of Socrates's persistence-determining kinds is the kind human person. But my remarks will apply just as well to those who think that among Socrates's persistence-determining kinds are the kind organism, the kind person, the kind brain, or even the kind soul.

Recall that in section 1.6, I described the notion of a modally essential difference as follows: it is a property that (i) an individual,  $x$ , has in every possible world in which  $x$  exists, and (ii) it is possible for  $x$  to have it, even though not all individuals have it.

Moreover, the explanatory condition on the real definition of individuals, which I described in section 1.6 and argued for in both that section and section 1.5, implies the following: It is metaphysically necessary that for all individuals,  $x$ , and modally essential differences of individuals,  $P$ ,  $x$ 's satisfying  $x$ 's real definition, generally, fully explains why  $x$  has  $P$ . This was the conjunct I labeled (ED.I).

I think that the arguments of sections 1.5 and 1.6 show that (ED.I) is true. So I will not discuss my reasons for (ED.I) again. Instead, I will note the consequence of (ED.I) I derived in section 1.7: if a property,  $P$ , is a modally essential difference of an individual,  $x$ , then absent some defeater, we are justified in believing that  $x$ 's having  $P$  is explained by  $x$ 's satisfying  $x$ 's real definition. I called this consequence (EJ.I).

Hence, in this section, my argument is the following: there is a persistence-

determining kind,  $K$ , such that Socrates's being a member of  $K$  is a modally essential difference of Socrates. Given that and (EJ.I), we are *prima facie* justified in believing (2).

Consider any persistence-determining kind of which Socrates might plausibly be a member. It's clear that no matter which of these kinds we choose, it is possible for Socrates to be a member of this kind even though not everything is a member of this kind.

Suppose human person is a persistence-determining kind of Socrates. Then, it is actually the case that Socrates is a human person but not everything is a human person.

Or suppose brain is a persistence-determining kind of Socrates. Then, it is actually the case that Socrates is a brain but not everything is a brain.

Some might wonder about the kind (if it is a kind) material object. For some have said that the only objects in existence are material objects. But even if that is true, most would concede that it is still possible for Socrates to exist and yet there be immaterial objects in existence, such as ghosts and other spirits.<sup>12</sup>

So I think it is obvious that for any persistence-determining kind of which Socrates is a member, Socrates's being a member of that kind satisfies condition (ii) of my definition of a modally essential difference. That is, it is possible for Socrates to have the property of being a member of that kind even though not everything is a member of that kind.

Thus, as I see it, the only question regarding the argument of this section is about (i). That is, the second premise of my argument rests entirely on whether there is some persistence-determining kind,  $K$ , such that Socrates's belonging to  $K$  is modally essential to Socrates.

According to Penelope Mackie, "it is almost universally held that, whatever other

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<sup>12</sup>(Lewis, 1986, p. 73).

[modally] essential properties an individual may have, there is some sort or kind to which it belongs [modally] essentially.” (Mackie, 2006, p. vii)

In saying this, Mackie refers to some sort or kind to which that individual actually belongs. Thus, the claim is usually something like the following: Socrates is a member of some kind, such as human person, and in every world in which he exists, he is a member of that kind.

I cannot appeal to this consensus to establish my second premise. For my second premise requires that Socrates’s membership in a persistence-determining kind is modally essential to Socrates and not just his membership in some kind or another.

Nevertheless, the claims are related. As Mackie notes, the primary reason why it is said that Socrates’s belonging to some kind or another is modally essential to Socrates is because this rules out his belonging to radically different kinds, like the kind prime number or the kind tropical fruit (Mackie, 2006, pp. 118–119).

I think that Socrates could not be a pineapple or the number 17.<sup>13</sup> So I agree that the standard motivation for this almost universally held view is true. And I think this same motivation also establishes my claim that there is some *K* such that Socrates’s membership in *K* is modally essential to him.

Indeed, this would appear to be Wiggins’s view. Thus, Mackie says,

Suppose that it is true that Aristotle could not have been a centipede instead of a man [human]. Why is this so? Wiggins’s theory suggest the following as an explanation. *Man* and *centipede* are sortals that supply different, and incompatible, principles of individuation. Hence Aristotle could have been a centipede only if he could have had a different principle of individual from his actual principle. (Mackie, 2006, p. 132)

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<sup>13</sup>A substance dualist may affirm that it is possible for Socrates to have a pineapple body. Similarly, a substance dualist might say (though I think most wouldn’t) that it is possible for the number 17 to have Socrates’s soul. I do not deny these claims when I say that there is no possible world where Socrates *is* a pineapple or *is* a prime number.

Mackie's term "principle of individuation" derives from Wiggins. She explains that term as follows:

On one interpretation [of Wiggins], a principle of individuation is what has traditionally been called a 'criterion of identity': a principle that determines answers to questions about identity and distinctness at a time and over time. . . . The idea is that if the concept *frog* supplies a [principle of individuation] for frog, then this principle will determine, among other things, whether a given portion of matter constitutes at a given time, one frog or two; whether spatio-temporal continuity is a requirement on the continued existence of a frog; whether the relation between a live (and kicking) frog and its corpse is that of identity; and in general, what sorts of alteration are compatible with the survival of an individual that is a frog. (Mackie, 2006, p. 134)

In other words a principle of individuation for a kind either is or at least entails the criteria of identity over time for that kind. Mackie notes later that Wiggins confirmed with her that this interpretation is correct (Mackie, 2006, p. 143, fn. 20).

Hence, Wiggins's argument appears to be this. Socrates cannot belong to radically different kinds because he belongs to a persistence-determining kind such as human person in every world in which he exists. Socrates's belonging to that persistence-determining kind determines that Socrates has the criteria of identity over time of a human.

Since it is impossible for something with the criteria of identity over time of a human person to be a centipede, it follows that Socrates is not a centipede in any world in which he exists. Presumably, the same remarks would preclude Socrates's being a pineapple or the number 17.

However, again, I will not assume that continuants have criteria of identity over time. Instead, they may only have persistence profiles.

A similar argument can be given from the assumption that human persons and centipedes have different persistence profiles. Thus, given that Socrates is a human person in every world in which he exists, he has the persistence profile of a human person in every such world. Since it is metaphysically necessary that everything with the persistence profile of a human person does not have the persistence profile of a centipede, it follows that it is impossible for Socrates to be a centipede. Again, I think the same remarks hold for his being a pineapple or his being the number 17.

This argument and Wiggins's original argument assume that Socrates is a human person in every world in which he exists. But it need not. It only requires that Socrates is a member of some kind  $K$  in every world in which he exists and that his membership in  $K$  determines that he does not have the persistence profile of a centipede, a pineapple, or a prime number. Assuming he lacks the persistence profile of these kinds, he is then not a member of these kinds. Moreover, the reason he lacks these persistence profiles is because the kind human person determines the same persistence profile for Socrates in every possible world in which he exists.

To rule out the claim that Socrates could be a pineapple, this argument must appeal to his being a member of some kind or another that has criteria of identity over time or a persistence profile that are inconsistent with his being, for example, a pineapple.

Suppose we cannot say that Socrates belongs to the kind human person or even the kind human or even the kind person. Perhaps, for example, he belongs to the kind brain or the kind soul. Presumably, this is still sufficient to rule out Socrates's being a pineapple in any world. For presumably, the possession of a persistence profile of a brain or a soul is inconsistent with the possession of the persistence profile of a pineapple.

Mackie notes that her summary of the argument assumes that humans and centipedes have different criteria of identity over time. In my argument, the analogous

assumption is that the possession of the persistence profile of a human person is inconsistent with the possession of the persistence profile of a centipede.

Mackie questions whether this assumption is reasonable. Hence, she asks, “how are we to decide, of two animals, whether or not they share a principle of distinction and persistence? Do cats share their principle of distinction and persistence with tigers? With dogs? With humans? Do they share it with frogs, or with butterflies, or with amoebas?” (Mackie, 2006, p. 136)

Some might say that humans and centipedes share the same criteria of identity over time or persistence profile. For example, they might say that they share the criteria of identity over time or persistence profile of an organism. If so, then Socrates’s possession of the criteria of identity over time or persistence profile of a human is not inconsistent with his sharing the criteria of identity over time or persistence profile of a centipede. For in this case, these are the same criteria and persistence profiles.

Recall that the motivation for Wiggins’s view was that it rules out a continuant’s belonging to radically different kinds, such as the kind tropical fruit and the kind prime number. I think that Wiggins’s argument and mine still rule out Socrates’s belonging to these kinds even if it remains in question as to whether Socrates could be a cat, a dog, a frog, a butterfly, an amoeba, or a centipede.

We can disagree on what counts as a radically different kind for Socrates. There’s room for debate about whether the kind cat (if it is a kind) is radically different from the kind to which Socrates actually belongs. Nevertheless, I think that the kind tropical fruit and the kind prime number are obviously radically different from the kind to which Socrates actually belongs.<sup>14</sup>

Some might suppose that Socrates belongs to the kind material object or the kind spacetime worm (this assumes they are kinds). If so, perhaps this prevents Wiggins’s argument from showing that Socrates cannot belong to radically different

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<sup>14</sup>Fruit are probably not organisms, since they are not biological individuals. For the notion of biological individuality, see (Wilson and Barker, 2024).

kinds. For proponents of these views can point out that pineapples are spacetime worms (with pineapple-shaped time slices) and that they are also material objects. If so, then Socrates's having the criteria of identity over time or persistence profile of a spacetime worm or a material object is consistent with Socrates's being a pineapple.

Suppose that Socrates's membership in these kinds does not preclude his being a pineapple. If so, then I would say that these cannot be Socrates's persistence-determining kinds.

I think that the advantage of Wiggins's view is that it rules out the claim that Socrates's persistence-determining kinds are the kind spacetime worm or the kind material object. Indeed, I think it is precisely for this reason that we should say that Socrates's persistence-determining kind must be something more specific (material object that is human, spacetime worm that has only human-shaped time slices, and so on).

I think you could put the point of Wiggins's argument as follows: a plausible explanation of the fact that Socrates both cannot be nor change into a member of a radically different kind is that Socrates belongs to some persistence-determining kind, membership in which necessarily precludes his changing into a member of a radically different kind. Moreover, he belongs to that kind in every possible world in which he exists. Since I think that is sufficiently plausible explanation of why Socrates could never be a pineapple, I endorse Wiggins's argument.

Although Mackie is skeptical of Wiggins's claims, she concedes the point that *given* Socrates is never a member of a radically different kind in any possible world, this is plausibly "anchored" by facts about the kind to which Socrates belongs.<sup>15</sup>

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<sup>15</sup>Hence, she says, "I think that this seductive idea [the anchoring of modal facts] should be resisted. Once we fall under the spell of this conception, I think that we have no principled way of avoiding a commitment to much stronger, and far less defensible, claims about the essential properties of things than are warranted by a mere rejection of extreme haecceitism." (Mackie, 2006, p. 167)

My difference with Mackie is just that I think that if our commitment to those stronger claims is a result of our commitment to the impossibility of Socrates's being a pineapple, then I think our commitment to those stronger claims is principled.

Her primary concern with such a view is that the kinds in question need not be “sortal kinds.”<sup>16</sup> On her view, the requirement that it be impossible for individuals to undergo radical change can be secured via membership in a kind that she says “may be too broad to count as a sortal kind, because it may fail to determine a single “identity-cum-persistence” condition.” (Mackie, 2006, p. 147)

“Identity-cum-persistence conditions” are just what I call criteria of identity over time (Mackie, 2006, p. 145). Thus, like Mackie, I agree that an individual can be a member of a kind that fails to determine some criteria of identity over time, despite the fact that membership in that kind rules out radical change in kind. For it may be that the kind determines that individual’s persistence profile while failing to determine its criteria of identity over time.

Mackie is, I think, correct that the argument appealing to the impossibility of radical change in kind fails to establish that an individual’s membership in one of its actual sortal kinds is necessary for its existence. Again, for Mackie, a sortal kind is a kind which determines an individual’s criteria of identity over time. But a persistence-determining kind is not necessarily a sortal kind. For a persistence-determining kind could determine an individual’s persistence profile instead of determining any criteria of identity over time.

Granted this, Mackie’s criticism of this family of arguments is, in fact, consistent with my claim that the best and most plausible way of explaining the impossibility of radical change in kind is by affirming the view that an individual is a member of some actual persistence-determining kind in every world in which that individual exists.

Since I affirm the impossibility of radical change in kind, I affirm that Socrates is a member of one of his actual persistence-determining kinds in every world in which he exists.

Thus, given the explanatory condition on real definition, we are justified in con-

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<sup>16</sup>Although she also thinks that Socrates could be a pineapple and maybe even a prime number (Mackie, 2006, p. 118). She does not assume these claims in her objection to Wiggins’s argument.

cluding that Socrates's being a member of that kind is explained by his satisfying his real definition. And so we are justified in accepting my second premise:

- (2) Socrates's satisfying his real definition explains Socrates's belonging to some persistence-determining kind.

And so I conclude that this premise is true.

Hence, my argument is sound. And so if the sortal dependency thesis is true, Socrates's criteria of identity over time or his persistence profile are explained by Socrates's satisfying his real definition.

## 5.4 Against Conventionalism

Robert Nozick describes his view of personal identity as follows:

The content of the measure of closeness, and so the content of a person's identity through time, can vary (somewhat) from person to person. What is special about people, about selves, is that what constitutes their identity through time is partially determined by their own conception of themselves, a conception which may vary, perhaps appropriately does vary, from person to person. (Nozick, 1981, p. 69)

David Braddon-Mitchell and Kristie Miller defend a similar view:

It is an increasingly influential view that personal identity over time is in part a matter of the attitudes or desires of the entities that constitute persons. . . . On these views a person's identity over time is, at least in part, determined by the various person-directed practices of the individual and/or of the community. . . . Yet had these practices been somewhat different, she would have failed to survive the event even though, as it was, she did survive. (Braddon-Mitchell and Miller, 2004, p. 457)

More recently, Michael Tze-Sung Longenecker has also defended a kind of conventionalism about personal identity:

What sorts of events could I survive? Suppose that I enter a teletransporter which records all of my physical and psychological features, breaks me down into my component atoms, and then creates an exact duplicate of me in a distant machine out of completely different molecules. Would I be the duplicate? Conventionalists believe that the answer to this depends on our attitudes concerning what people are. . . . Such attitudes might be our beliefs about who we are, or attitudes of prudential concern, moral responsibility, property ownership, etc.(Longenecker, 2022, p. 459)

I will define **conventionalism** about personal identity as the claim that for all human persons,  $x$ , some facts about  $x$ 's identity over time are at least partially determined by  $x$ 's conception of  $x$ , by  $x$ 's attitudes or practices directed toward him or herself, or by the attitudes or practices of some community to which  $x$  belongs.

In this section I argue that conventionalism is false, given the conclusion of my primary argument and given the sortal dependency thesis.

Crucial to the argument of this section is the idea that an individual cannot define him- or herself, either alone or as part of a community. More exactly, the claim is that no real definition is the product of private or public convention. And this should be no surprise. Real definitions are discovered, not made. For if real definitions were made, they could not express facts about the identity of things.

I will elaborate on these claims shortly. However, I now describe in detail some features of conventionalism that play an important role in my argument.

When a fact about  $x$ 's personal identity is determined in a way that would entail the truth of conventionalism, I will say that it is **conventionally determined**. Hence, conventionalism can be equivalently defined as the view that some facts about a human person's identity over time are conventionally determined.

Longenecker describes a split between conventionalists who believe that an individual's own attitudes towards him or herself determine facts about that individual's identity over time ('private conventionalists') and conventionalists who believe that the attitudes of the community to which that individual belongs determine facts about that individual's identity over time ('public conventionalists') (Longenecker, 2022, p. 460).

In my terminology, these conventionalists differ on when conventional determination occurs. Nevertheless, if either view is true, some truths about an individual's identity over time are conventionally determined.

Conventionalism is consistent with the claim that some but not all facts about an individual's identity over time are conventionally determined.

One could agree that the facts in question have to do with one's persistence in science fiction cases, like teletransportation. And one could also say the same for Methuselah cases, where one persists into eternity (many believe these cases are not science fiction). But perhaps conventionalist ought not to say that it is conventionally determined that Socrates remains in existence when he puts on a hat.

Conventional determination is, plausibly, a kind of explanatory determination. For if one were to ask the conventionalist why Socrates in  $w$  would remain in existence as a result of teletransportation while Socrates in  $w^*$  would cease to exist in that same scenario, the answer would surely be because the conventions in  $w$  differ from the conventions in  $w^*$ .

Thus, if conventionalism is true, it is conventionally determined in some case that an individual persists. If so, then it is false that in every world in which that individual exists, that individual persists through that case. For conventions differ from world to world. Hence, according to the conventionalists, in some worlds, teletransportation is a case where Socrates persists. In other worlds, it is the end of his existence.

If a case in the persistence profile of an individual is conventionally determined,

then it is false that in every world in which that individual exists, that individual persists through that case. In some worlds, teletransportation is a case where Socrates persists. In other worlds, it is the end of his existence.

More generally, take any human convention. That convention could differ from one possible world to another. Human conventions do not hold with metaphysical necessity. Nor do they remain the same in every world in which an individual exists. While conventionalists differ on which conventions bear on an individual's persistence, they all agree they are similar to facts like the practices of the community in which an individual is situated or attitudes that individual has towards his or her future self. And these differ from one possible world to another.

I will now argue that a proponent of the sortal dependency thesis should reject conventionalism.

By appealing to the sortal dependency, I am not begging the question against the conventionalist.

Recall that the sortal dependency thesis says that the persistence-determining kinds of a continuant determine in an explanatory way its criteria of identity over time or persistence profile.

Conventionalism is consistent with the sortal dependency thesis. After all, the sortal dependency thesis is consistent with the view that it is contingent which are an individual's persistence-determining kinds. And it is also consistent with the view that a kind's being persistence-determining is contingent.

Thus, a conventionalist may reconcile his or her view with the sortal dependency thesis by proposing that it is conventionally determined which are the persistence-determining kinds. Perhaps some conventionalist would say that the kind brain is persistence-determining in this world. But in worlds where the community couldn't care less about brains, it is the kind person that is persistence-determining.

So it is not the sortal dependency thesis itself that poses a challenge to con-

ventionalism. Nevertheless, my argument against conventionalism assumes the sortal dependency thesis. And this is why I say that the proponent of the sortal dependency thesis should reject conventionalism.

The conclusion of my primary argument is as follows:

- (3) If the sortal dependency thesis is true, Socrates's satisfying his real definition explains his criteria of identity over time or his persistence profile.

Given (3) and given that the sortal dependency thesis is true, it follows that Socrates's satisfying his real definition explains his criteria of identity over time or his persistence profile. I will assume this stronger conclusion, since I am assuming that the sortal dependency thesis is true.

Given that Socrates's satisfying his real definition explains his criteria of identity over time or his persistence profile and given the transitivity of explanation, Socrates's satisfying his real definition explains why he persists in a case of teletransportation.

If so, then I think we should deny that there is an independent explanation of why Socrates persists in a case of teletransportation. That is, there could be another explanation of why Socrates persists in a case of teletransportation. But that other explanation must either explain or be explained by Socrates's satisfying his real definition. Either way, that explanation would fail to be independent of the explanation from Socrates's satisfying his real definition.

Suppose it is conventionally determined whether Socrates persists in a case of teletransportation, and suppose Socrates's satisfying his real definition explains why it is conventionally determined whether Socrates persists in a case of teletransportation.

There are really two possibilities which are picked out in this way. The first says the explanation of Socrates's persistence in a case of teletransportation begins at real definition, then moves to convention, then moves to kind, then to persistence (or not). The second says the explanation of Socrates's persistence in a case of teletransporta-

tion begins at real definition, then moves to kind, then moves to convention, then to persistence (or not). I'll need to rule both of these out.

It's easier to think about these options by way of examples. Let's start with the first possibility. One could imagine that Socrates's real definition is something like the following: *Socrates is the individual who, when the conventions are like this, belongs to this persistence-determining kind, and when the conventions are like that, belongs to this persistence-determining kind, and so forth.*

On this account, Socrates's persistence-conditions are conventionally determined, but his real definition matches conventions to persistence-determining kinds.

Thus, the fact that it is conventionally determined whether Socrates persists in a case of teletransportation could be explained by Socrates's belonging to the kind person. Socrates's belonging to the kind person is explained by the fact that the conventions are this way and the fact that Socrates satisfies his real definition.

Thus, Socrates's persistence conditions would be explained both by convention and by his satisfying his real definition.

However, this view is inconsistent with my argument for (2). For recall that I argued that there is some persistence-determining kind,  $K$ , such that Socrates's belonging to  $K$  is modally essential to Socrates. On this view, Socrates's belonging to any given kind depends on what conventions hold. Since conventions vary from world to world, there is no such  $K$  whose membership is modally essential to Socrates.

In general, any version of conventionalism which says that Socrates's membership in this or that persistence-determining kind is conventionally determined will have this consequence. This is because conventions vary from world to world. And so Socrates's membership in this or that persistence-determining kind will vary from world to world as well.

One could avoid this by proposing that Socrates belongs to a very different kind than any I have considered so far. This is the second possibility I mentioned.

Suppose, for example, that  $K_c$  is the kind one belongs to so long as one persists through teletransportation when the conventions are like this, doesn't persist through teletransportation when the convention are like that, and so forth.

It could be that Socrates's satisfying his real definition explains Socrates's belonging to  $K_c$ . Moreover, this view is consistent with my argument for (2) because one could say that Socrates's belonging to  $K_c$  is modally essential to him. Moreover, belonging to  $K_c$  is consistent with conventionalism because belonging to  $K_c$  entails that one's persistence through teletransportation is conventionally determined.

A natural reply to this view is to say that there is no such kind  $K_c$ . I think that is a good reason to reject this view.

But there's another reason to reject this view. On this view, Socrates's belonging to  $K_c$  is modally essential to Socrates. And presumably, his belonging to  $K_c$  is a modally essential difference of Socrates. So it's reasonable to conclude that Socrates's satisfying his real definition fully explains his being a member of  $K_c$ .

But on this view, Socrates's satisfying his real definition doesn't fully explain his being a person, his being a brain, his being a human, his being a soul, or any of the typical kinds that are invoked in the personal identity literature. Rather, we always need to expand upon some facts in Socrates's real definition by saying something about what the conventions are in this or that world.

After all, on this view, it is first in virtue of belonging to  $K_c$  and then the conventions being a certain way that Socrates can be a member of these more ordinary kinds in the first place.

I think it's implausible that Socrates's real definition fails to fully explain his being a person, his being a brain, his being a human, his being a soul, or some other such kind.  $K_c$  is a gruesome kind. These other kinds are not. It's more plausible to suppose that Socrates's real definition will fully explain his belonging to a non-gruesome kind than his belonging to a gruesome one.

In general, any version of conventionalism which says that Socrates's real definition fully explains his membership in a persistence-determining kind whose criteria of identity over time or persistence profile is of the kind allowing for both persistence in a case in one world and non-persistence in that same case in another world will appeal to a gruesome kind.

By ruling out these two suppositions, I have shown that Socrates's satisfying his real definition cannot explain the fact that it is conventionally determined whether Socrates persists in a case of teletransportation.

Thus, if (3) is consistent with conventionalism, it must be that some facts about an individual's attitude or the attitudes of a community explain Socrates's satisfying his real definition. In other words, it must be that it is conventionally determined that Socrates satisfies his real definition.

Hence, if I can show that Socrates's satisfying his real definition is not conventionally determined, it follows that (3) is inconsistent with conventionalism. And it is for this reason that I think the crucial part of my argument is the idea that an individual cannot define him- or herself, either alone or as part of a community.

In section 1.2, I said that real definitions state a fact about what it takes to be identical to an individual in every possible world in which that individual exists. It is because of this that I said that real definitions express claims about the identity of individuals.

Since conventionally determined facts about an individual are not the same in every world in which that individual exists, facts that are conventionally determined cannot say what it takes to be identical to that individual in every world in which that individual exists. Hence, real definitions cannot state facts whose obtaining is conventionally determined. And if they cannot state any such facts, then real definitions cannot be conventionally determined.

Suppose, for example, that it is conventionally determined that Socrates persists

through teletransportation because he is a person and the person doesn't cease to exist as a result of teletransportation.

Nevertheless, it is possible for Socrates to exist and fail to be a member of this community. Instead, he could be a member of a community that determines that he does not persist through teletransportation because he is an organism and the organism ceases to exist as a result of teletransportation. Hence, there are possible worlds where Socrates exists (is identical to himself) and these facts about the kind to which he belongs and when he persists differ.

These facts, then, could not figure into Socrates's real definition. Again, given my comprehensive condition, all such facts must obtain in every world in which Socrates exists. Hence, it follows that Socrates's satisfying his real definition is not conventionally determined.

One could state the point of this argument from (3) and the sortal dependency thesis as follows. Given (3) and the sortal dependency thesis, facts about Socrates's identity over time 'flow from' facts about his identity. Since facts about Socrates's identity hold in every world in which he exists, facts about when he can persist (his identity over time) hold in every world in which he exists.

Conventionalism inevitably severs this connection between facts about an individual's identity and an individual's identity over time. Indeed, it must. An individual's identity is necessary to that individual. But facts about what attitudes a person has or a community's practices are not necessary to an individual. So given that real definitions express facts about an individual's identity, of course an account of an individual's persistence appealing to its real definition will conflict with an account of an individual's persistence appealing to convention.

Thus, I conclude that the conjunction of (3) with the sortal dependency thesis justifies our rejecting conventionalism. And since I have argued that the proponent of the sortal dependency thesis should accept (3), the proponent of the sortal dependency

thesis should reject conventionalism.

In my argument for (2), I said that we are justified in believing that Socrates's belonging to a persistence-determining kind is a modally essential difference of Socrates. But the justified belief we have in this claim is defeasible. And some may propose that given the argument of this section, the conventionalist has a defeater for this claim.

That is, they might propose that since conventionalism is true, we are not justified in believing that Socrates's belonging to a persistence-determining kind is a necessary difference of Socrates. And the reason for this is that conventionalism is true.

Moreover, since, then, we lack a reason for (2), we also lack a reason for (3). And thus, the proponent of the sortal dependency thesis can maintain conventionalism by proposing that we have a defeater for the claim that Socrates's belonging to a persistence-determining kind is a necessary difference of Socrates.

However, the claim that there is some persistence-determining kind which Socrates's belong to in every world in which he exists is more obvious than the claim that conventionalism is true.

I said that we should think that Socrates's belonging to a persistence-determining kind is a modally essential difference of Socrates because Socrates's being a brain, a human, and so forth is a way in which Socrates differs from other things. And I said that it is a way he is in every possible world in which he exists because he cannot be a pineapple or a prime number. The conjunction of these facts is more obvious than the truth of conventionalism.

Thus, I think that we cannot take conventionalism as a defeater for the claim that Socrates's belonging to a persistence-determining kind is a modally essential difference of Socrates. And thus, my argument for (3) provides a reason for the proponent of the sortal dependency thesis to reject conventionalism.

Since I endorse that thesis, I reject conventionalism.

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