Essentialism in Aristotle, Kripke and Fine: differences in explanatory purposes

Wolfgang Sattler

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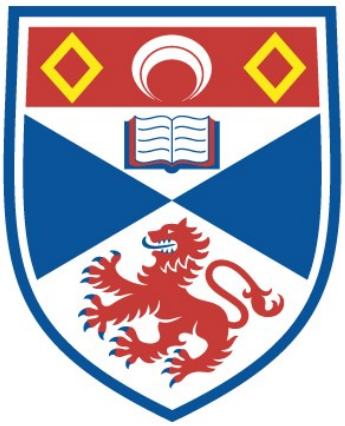
at the
University of St Andrews



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For my father.

ESSENTIALISM IN ARISTOTLE, KRIPKE AND FINE – DIFFERENCES IN EXPLANATORY PURPOSES

(Wolfgang Sattler, 13th January 2017)

Abstract: In this dissertation I compare the different forms of essentialism that we find in Aristotle, Saul Kripke and Kit Fine. I argue that there is a clear difference in explanatory purpose between Aristotle's essentialism on the one side and Kripke's and Fine's essentialism on the other, while the last two have closely connected explanatory purposes. Aristotle's essentialism is mainly concerned with questions of substance, in particular in what sense essences are substances. In contrast, Kripke's 'modal essentialism' and Fine's 'definitional essentialism', as I dub them, are both primarily concerned with questions of modality, in particular where metaphysical necessity has its place or source. Both associate metaphysical necessity closely with essence, though in different ways. While Fine claims (implicitly) that his essentialism is broadly Aristotelian in spirit, I argue that there are substantial differences between them, in particular with respect to their conceptions of real definition and related notions. And it is exactly the difference in explanatory purpose between Fine's and Aristotle's essentialism that explains these substantial differences. I show how closely Fine's and Kripke's essentialism are connected, despite clear differences with respect to their conceptions of essential properties; and further where and why Aristotle's essentialism differs from Kripke's and Fine's essentialism with respect to the kinds of properties that count as essential (apart from differences in that respect between Kripke and Fine). I further argue for a systematic (though imperfect) correspondence between the kinds of properties of individuals considered to be essential in Kripke and Fine, and certain kinds of causal relations in the broad Aristotelian sense. I conclude that there is good reason to hold, that Aristotle's essentialism has basically a different subject matter than Kripke's and Fine's essentialism, contrary to a widespread assumption. And I identify several issues for future research to complete my comparison.

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INTRODUCTION:

THE 'ESSENTIALIST TRADITION' FROM ARISTOTLE TO KRIPKE AND FINE

This dissertation examines the question whether the different theories of 'essentialism' advocated by Aristotle, Saul Kripke and Kit Fine are about the same subject matter or not. I argue here that there is good reason to hold that only Kripke's and Fine's essentialism deal with the same problem, while Aristotle's essentialism deals with a different subject matter.

Essentialism is usually characterised roughly either as the view that at least certain things have essences, where an essence is what corresponds to the question, what something is; or as the view that the properties of at least some things divide into essential and accidental properties. Advocates and opponents of essentialist views characterised in the latter way usually identify essential properties with necessary properties and accidental properties with contingent properties, a view which is sometimes called "modal essentialism". In the history of philosophy essentialism is usually associated mostly with Aristotle. Essentialism in contemporary debates is associated in particular with the influential works of Saul Kripke, a modal essentialist. Kit Fine has more recently argued, for many convincingly, against modal essentialism and in favour of a conception of essence on the model of 'real definitions', where the definiens can also be a non-linguistic object. Fine appears to be part of a Neo-Aristotelian renaissance in metaphysics that is inspired by or wants to revive central Aristotelian ideas, such as the idea of real definitions and the hylomorphist idea that at least certain objects are compounds of some matter and a form. My interest in essentialism covers both Aristotle's and contemporary essentialism, of which Kripke and Fine are influential representatives. Given these different essentialist theories, the question arises, in how far they differ, and more radically, whether they are in fact dealing with the same subject matter. While it has been noticed that there are certain philosophical and conceptual differences between these theories, it seems *prima facie* as if these essentialist theories are concerned basically with the same subject matter, with what is essential about objects. After all, these theories are all called "essentialism" and

it is usually not pointed out that this is only homonymously so.[1] In fact, there seems to be a general consensus that these theories are all about the same subject matter, as the following overview strongly suggests.

Modal essentialism emerges within the context of quantified modal logic. Quine, a prominent anti-essentialist, associates modal essentialism frequently with Aristotelian essentialism. In (Quine 1979, p. 176), for instance, he warns against the 'metaphysical jungle of Aristotelian essentialism' to which quantified modal logic leads in his view, and he means thereby modal essentialism. Kripke does not, at least not explicitly, question Quine's association of modal essentialism with Aristotelian essentialism. Neither does Fine, who argues against the modal essentialist approach and who explicitly states that his metaphysical views, where essentialism is central, are broadly Aristotelian (Fine 1994a p. 2, 2011a, p. 8 Fn.1). Fine argues that there have been two main approaches to clarify the concept of essence. One conceives essence on the model of real definition. This is the approach Fine advocates. The other approach elucidates the concept of essence in modal terms, and this is what modal essentialism does. But both approaches, Fine holds, go back at least to Aristotle (Fine 1994a, pp. 2f). This involves the assumption that Aristotle's, Kripke's and Fine's essentialist theories are concerned basically with the same subject matter, namely essence or the concept of essence. They differ in that they adopt different approaches to clarify that concept.

More recently Klima (2002) and Oderberg (2007) have argued that modal essentialism in general, not just Kripke's version of it, differs clearly from Aristotelian essentialism. Both primarily refer to Thomas Aquinas' interpretation of Aristotle's essentialism. Klima (2002, p. 175f, 180f) even argues that only Aristotelian essentialism should be properly called "essentialism", and thus that "modal *essentialism*" or "contemporary *essentialism*", as Klima calls it, is a misnomer. He roughly characterizes

[1] Marcus (1971, pp. 188-92, 197-202) distinguishes two 'modes' of essentialism, 'Aristotelian essentialism' and 'individuative essentialism'. I agree in some respects with Marcus' characterisation of this distinction and of Aristotle's essentialism. What is relevant here, however, is that Marcus seems to take essentialism in general to be about necessity. The two modes of essentialism differ in being about necessity in different senses. Aristotelian essentialism is associated with natural or causal necessity and is about necessary properties shared by objects of the same kind. Individuative essentialism is about necessary properties of an object O that are partially definitive of the special character of O. Marcus thus assumes a common subject matter of modal and Aristotelian essentialism, namely *de re* necessity.

Aristotelian essentialism as the thesis that things have essences and modal essentialism as the thesis that some common terms are rigid designators. A rigid designator here is a term that refers to the same object in any counterfactual situations or 'possible worlds' where that object exists. These two related though distinct theses, Klima holds, acquire their proper meaning in their respective conceptual frameworks, in particular their logical and semantical frameworks. Oderberg and Klima criticise modal essentialism essentially for its mistaken approach to essence through language.

> "The basic ideas [of Kripke's and Putnam's essentialist works] are too well known to require restating here: what is relevant for our purposes is the central thought that one can approach essence by considering language, in particular whether a term functions as a designator of the same thing in all possible worlds in which it exists." (Oderberg 2007, p. 4)

Oderberg criticises that the 'rigid designator approach' to essentialism presupposes already certain (substantial) essentialist truths rather than leading to them, contrary to what certain modal essentialists hold. This approach further depends on reflections on our intuitions about the meaning of terms to determine whether a term is a rigid designator, and thus whether it designates something essential about an object or not. In Aristotelian essentialism in contrast, so the apparent point, to determine what the essence of an object is, is a matter of scientific investigation and experience, and not a matter of 'personal intuitions'. To take an example from Klima: Kripke argues for the view that "heat" rigidly refers to molecular motion and that it is therefore essential for heat to be molecular motion. But this view is based merely on Kripke's intuition about what "heat" refers to. According to another intuition "heat" refers to whatever it is that causes the sensation of heat in us, may it be molecular motion or something else. The problem is, according to Klima, that the logical framework underlying modal essentialism provides no principled reason to decide between these contrary intuitions, since it provides no reason that there are any essentialist terms at all (Oderberg 2007, pp. 4-6; Klima 2002, pp. 177-79, 192).

Both Oderberg and Klima seem to view Fine as an ally against modal essentialism. According to Oderberg (2007, p. 7), Fine has 'undermined the very thinking at the heart' of modal essentialism, namely to conceive essence in modal terms. According to Klima, Fine's conception of essence on the model of real definition

'clearly moves in the right direction'. While Klima nevertheless denies that Fine's account stands in the Aristotelian tradition, because it fails to employ the traditional concepts in their theoretical context (Klima 2002, p. 181), Oderberg does not so, at least not explicitly. I agree in some respects with Klima and Oderberg, but I disagree in others. I think in particular that their focus on the use of rigid designators in modal essentialism, and the role of intuitions there, is rather misleading, at least in Kripke's case.[2] And I disagree that Fine has undermined the very thinking at the heart of modal essentialism. I argue in fact as part of this dissertation that Fine's essentialism preserves the very spirit of modal essentialism (cf. §IV.1, §IV.2.2, §IV.3.2.2). The important point for my immediate purpose, though, is that both Oderberg and Klima seem to assume that modal essentialism, Fine's essentialism and Aristotle's essentialism are all concerned basically with the same subject matter, the essences of things. The difference between these forms of essentialism is rather one of different approaches. Oderberg expresses this view, for example, in the quote above. As for Klima:

> "As a matter of fact, this last remark [about intuitions on whether a term refers rigidly] shows one of the most basic problems with Kripke-style "essentialism," namely, that the modal approach to *essence* apparently puts the cart before the horse. Since it seeks to explain essence in terms of essential properties, rather than the other way around, it certainly cannot invoke essences in trying to cope with its primary task presented by anti-essentialist criticisms: to offer some reason why some common terms *have* to be regarded as essential to the things they are actually true of." (Klima 2002, p. 179)

[2] I cannot argue duly here for my disagreement. Note briefly, though, that introducing the notion of a rigid designator is part of Kripke's project to argue for modal essentialism as an in principle intelligible position (cf. §II, in particular §II.4.3.2, §II.6). Kripke does not claim in general, contrary to Oderberg's critique, that his semantic theory of direct reference, of which the notion of a rigid designator is a part, would be free of essentialist assumptions, and that from this theory, so conceived, non-trivial essentialist theses could be derived. Salmon (2005, cf. p.196), to whom Oderberg (2007, p. 5f) refers as a witness for his critique against Kripke, acknowledges that explicitly. Kripke considers the possibility of such a derivation only exceptionally, in the case of the so-called necessity of origin thesis (cf. §II.5). As to the role of intuition, I do not see why the Aristotelian would not have a similar problem to agree with his opponent on the usage of terms such as "heat" as Kripke has. And Kripke would hold, in agreement with the Aristotelian, that determining which properties of a kind of thing, such as water, are essential to it is (also) a matter of scientific investigation - and not merely of intuition (cf. §II.5, §II.5.2), as Klima claims.

Klima criticises that the modal essentialist 'puts the cart before the horse' in its approach to essences. This critique assumes that the modal essentialist actually aims at explaining the very essences of things with which also Aristotelians are concerned.[3]

The result of this overview, which I do not take to be complete, leads to the distinct impression, that it is commonly assumed by anti-essentialists and essentialists of different persuasions that Aristotle's, Kripke's and Fine's forms of essentialism are basically about the same subject matter, despite conceptual and methodological differences. The topic of this dissertation is to compare these three essentialist theories in particular with respect to this assumption. And I will argue that there is good reason to reject it. More precisely, I will argue that Aristotle's essentialism has a different subject matter than Fine's and Kripke's essentialism. I also argue that the latter two share the same subject matter, despite their obvious differences. Fine's essentialism is, as I see it, thus not Aristotelian in spirit, despite Fine's own suggestions pointing in that direction. It is rather intended as a development of modal essentialism and takes certain inspirations from Aristotle.

A preliminary question here is of course how to determine whether different theories are about the same subject matter. I assume here that the subject matter of a theory is substantially determined by its explanatory purpose. And I argue in this dissertation that there is a clear difference with respect to explanatory purposes between Aristotle's essentialism on the one hand and Kripke's and Fine's essentialism on the other. In short: Aristotle's essentialism associates essence with substance or fundamental being. It aims at explaining in what sense essences of concrete individuals are the substances of these individuals and the principles and causes of the natural order. Kripke aims at showing that metaphysical necessity can intelligibly be thought of as residing in the necessary, or essential, properties of things. Fine aims at showing how metaphysical necessity derives from the essences of things as its source. Kripke's and

[3] I agree in certain aspects with Charles (2010), Oderberg (2007), Gorman (2005) and Klima (2002) about what differentiates Aristotelian essentialism from modal essentialism and/or from Fine's essentialism. I do not have the space here to represent all their views in due detail in order to show how exactly my position differs from theirs, though I state their views briefly where relevant. Distinctive of my comparison in general is that I investigate whether there is a difference in subject matter due to a difference in explanatory purpose and not just a difference in approach to the (implicitly) assumed same subject matter.

Fine's conceptions of essence and essential property are linked to the notions of identity and of metaphysical necessity, though in different ways. They are concerned with the *modal logical structure* of reality, so to say, with essences as principles of this structure. By contrast, Aristotle is concerned with the *causal structure* of reality, with essences as causal principles.

I will proceed by offering an interpretation of the different 'forms of essentialism', as I will continue to say, in the first three chapters, beginning with Aristotle's essentialism, followed by Kripke's essentialism and then Fine' essentialism (§§I-III). I do not include here the technical side of Kripke's and Fine's theories, their modal and essentialist logics and semantics, but only the philosophical side. In my interpretations I pay special attention to the principal problem in the respective dialectical backgrounds that these essentialist theories aim to solve. The idea is that being aware of these problems helps to explain the principal motivations of the essentialist accounts and thereby to understand their explanatory purposes. Aristotle, for instance, is mainly concerned with problems of Plato's theory of Forms, in particular with the causal inertness of Forms.

In chapter IV, I bring together the results of the preceding chapters and show how the differences and commonalities in explanatory purpose help to explain further differences, and commonalities, between these three theories. I show that Kripke's and Fine's essentialism are closely related, and that Fine's and Aristotle's conceptions of real definition and related notions differ clearly, and why so. I further argue that there is an interesting correspondence relation between the causal structure of reality, assuming a broad, Aristotelian understanding of 'cause,' and the modal logical structure with which Kripke and Fine are concerned. I will argue, against the background of this correspondence relation, that there is a clear difference about which properties count as essential in Aristotle and in Kripke and Fine. All these comparisons are informative as such. They serve in addition to underpin the seminal importance of the explanatory purposes of these theories to draw a comparison between them.

CHAPTER I

ARISTOTLE'S ESSENTIALISM

§I.1. Introduction

Aristotelian essentialism can in general be characterized as the view that certain entities or objects in the world have essences. The essence of an entity is characterized in general as what that entity is in itself, or as such, in a sense. It is the 'substance' of that entity in the sense that it is the cause of the definite being and unity of that entity. Aristotle is liberal about what counts as an entity, for instance colour, artefacts, numbers etc., but he distinguishes them strictly with respect to their ontological status and the kind of being and unity they have. The fundamental kind of entity is also called "substance". Substances are in general sensible individuals such as Beulah the cow and a book and also the species and genera of these individuals, such as cow or animal, and further compounds of elements. Biological organisms are sensible substances in the strictest sense. They possess a kind of unity that exceeds the unity possessed by aggregates and compounds of elements and artefacts. Aristotle also acknowledges non-sensible substances, in particular the primary cosmological principle of motion, which is due to its fundamental status equated with god. Other entities, often called 'non-substances' in the literature, are certain kinds of features (e.g. qualities, quantities) that are 'predicated' of substances as their subjects from which they derive their status as entities. Non-substances have essences only in a derivative and loose sense. Sensible substances have essences in the strict and primary sense. The essences of sensible substances are causes and principles of being, unity and importantly also of motion of these sensible substances. They are a certain kind of dispositions, called 'natures' by Aristotle, that are innate to each sensible substance. They are individuals that fall under some species. The nature of a birch is specifically different from the nature of an oak. The natures of biological organisms, so-called souls, are causes of being and unity in the highest degree.

To understand Aristotle's essentialism properly it seems helpful to clarify from the start two central ideas on which it is based and which also determine Aristotle's methodology. One may be called the taxonomical principle. It consists in the thought

that the world is objective, determinate and well ordered. The sensible individuals in the world have universal aspects that classify them in what they are as falling within a comprehensive taxonomy of ontological categories and of natural genera and species. The other central idea may be called the hylomorphic principle. The central thought is that being is either potential being or actual being. Sensible particular substances are conceived as compounds of matter, as a principle of potentiality, and form, as the actuality of the matter. But the world in general is conceived in terms of potentialities, i.e., of powers, dispositions etc. and of actualities, i.e., the realisations and realities of potentialities. The world has an intelligible causal order. Essences in the strict sense, i.e., natures, are central parts of this causal order - they are causes. But they themselves can be grasped fully only in universal terms and as being classified taxonomically. Aristotle takes the physical, causal reality and the sensible particulars that constitute it to be ontologically fundamental (apart from god, the 'prime mover') rather than mathematics or universals.

The taxonomical principle seems inspired by Plato's doctrines of Forms,[4] universals of a sort, and the order among them. I will not have the space to address this aspect of Plato's influence on Aristotle, but I will address Plato's doctrine of Forms and certain problems with it as a central part of the dialectical background for Aristotle's hylomorphic principle. These problems can be summed up in the question of how Forms, and in consequence Aristotelian essences, can be causes of being, unity and becoming for concrete sensible particulars. For if they cannot, in what sense are they 'substances' or relevant at all for those particulars? I will refer to this question as the 'substance question' and argue that it is central for Aristotle's motivation to develop his conception of essence and his claim that the essences of sensible particular substances are natures and forms. Aristotle's conception of essence is linked to his conception of substance, but also to knowledge. Essences are ontological principles and thereby also epistemological principles. They are knowable and specifiable in real definitions. There are two kinds of real definitions in Aristotle. Firstly, I will argue that taxonomical definitions, as I will call them, define a kind of essence or sensible substances with respect to their kind of essence in terms of genus and differentia. Secondly, explanatory definitions, as I will call them, define a kind of sensible substance or natural

[4] I use a capital 'F' to mark when I speak of Plato's conception of Forms, as is often done.

phenomenon in terms of matter and form, the unifying cause and essence of the compound substance or the phenomenon.

The distinction between the hylomorphic principle and the taxonomical principle seems reflected in Aristotle's methodology. Burnyeat (2001 pp. 4-6, 19-21) argues convincingly that two kinds of passages which are relevant for Aristotle's essentialism can be distinguished. One kind of passage contains inquiries on an abstract level [*λογικῶς*]. This means in general that Aristotle does not take any principles that are 'peculiar' to a certain science or philosophical discipline into account in these inquiries. He does not, in particular, appeal to physical principles, that also figure prominently in his *Metaphysics*, such as matter or form or natures and neither to potentiality or actuality. I will refer to such passages as being written in the 'abstract mode'. Aristotle treats essence in the abstract mode in his works that form the so-called *Organon,* in particular in the *Categories*, in the *Topics* and in the *Posterior Analytics*.[5] But there are also passages in the abstract mode in his physical and metaphysical works. Physics for Aristotle deals with all entities that are as such subject to change and it comprises what we would distinguish today as physics, biology, chemistry or astronomy and even psychology to some extent. In contrast to the abstract passages there are passages that include the principles 'specific' to a subject matter. This is mainly true and relevant for the principles of physics just mentioned. I will refer to such passages, following Burnyeat, as being written in the "(meta)physical" mode. I agree with Burnyeat that we should distinguish between these two modes in Aristotle and I will highlight this distinction where pertinent. Assuming this distinction of modes I will further assume here that Aristotle's theoretical works are coherent. This is not a matter of course, especially as there appears *prima facie* to be an inconsistency between the *Categories* and the *Metaphysics* about what counts as substance in the primary sense. Appeal to the distinction of the different modes of inquiry affords a path to explain why there are in fact no inconsistencies.[6]

[5] I use by default the translations of Aristotle's works from *The Complete Works of Aristotle*, Barnes (ed.) 1995. References and translations from the Posterior Analytics, however, refer to Barnes's translation in: Aristotle. *Posterior Analytics*. Clarendon Press, Oxford 2002

[6] My approach is in agreement with Burnyeat but opposed in particular to Jaeger's 'developmental thesis'. While the *Categories* and the *Topics* reflect Aristotle's early views, so the claim, the *Metaphysics*

I will in the following first address Aristotle's essentialism as it is expounded in the abstract mode and mainly in the *Categories* and the *Topics*. The focus here is on distinctions of predication and the taxonomical principle. I will also discuss here briefly some aspects of Aristotle's peculiar expression for essence, literally 'the what it was for each thing to be that thing' (§ I.2). The following section concerns Aristotle's essentialism as it is expounded also in the (meta)physical mode, which includes central passages in the *Metaphysics* but also in the *Physics*. The focus here is on essences of particular substances as causes of being, unity and becoming. I will in particular address also certain problems with Platonic Forms that Aristote seeks to overcome with his essentialism, namely that Forms seem to be causally inert and irrelevant for explaining both the causal order of nature and our knowledge of it. These problems are related to the more general problem in Aristotle about whether substance is universal or particular (§ I.3).

§I.2. Essentialism under the Taxonomical Principle

It is mainly in the texts of the so-called Organon, written in the abstract mode of inquiry, that Aristotle expounds his essentialism under the taxonomical principle as I have called it. I will first introduce Aristotle's classification of entities in his *Categories* according to two principal predicational relations, inherence and synonymous predication (§I.2.1.). I will then elaborate the close link between Aristotle's conceptions of essence and substance as we find it explained mainly in the *Topics* (§I.2.2). I will then contrast essential, 'proper' and accidental predicates (§I.2.3), followed by an exposition of Aristotle's conception of 'taxonomical' definition in the *Topics* (§I.2.4). After that I will address briefly Aristotle's peculiar phrase for essence (§ I.2.5.).

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and *De Anima*, for instance, reflect his mature views. This thesis aims at solving seeming inconsistencies between different works of Aristotle's (cf. Patzig 1973, p.60 and apparently also M. Frede 1987, p.31).

§I.2.1. Synonymy and inherence in the *Categories*

In the *Categories* we find Aristotle's conception of a comprehensive taxonomy that classifies individual entities into categories, genera and species. Aristotle distinguishes two basic predicational relations between subject and predicate, synonymous predication, as I will call it ('being said of,' as Aristotle puts it), and 'inherence', as I will say ('being in,' in Aristotle). Based on the distinction between these two predicational relations Aristotle systematically classifies in *Cat* 2 all beings into four groups, called sometimes the 'ontological square': these are universal substances, individual substances, universal 'accidentals,' and individual 'accidentals'. Aristotle does not speak explicitly of universals here, but of genera, species, and differentiae. These however qualify as universals, i.e. they can in principle be predicated of several things (cf. also e.g. Bäck 2000, p.132, or Studtmann 2014).

The inherence relation marks the difference between substances and non-substances. Substances are the fundamental entities in Aristotle's ontology, e.g. Callias or Beulah the cow. They can be determined in certain respects, for instance as being white or as being in Athens or as running. These determinations are usually called accidentals or non-substances and 'inhere' in the substances they determine in some respect. What inheres in a subject is characterised as what is not a part of but cannot be separate from that subject (*Cat* 1a21-23). Roughly speaking, accidentals are inhering features that determine a substance in some determinable respect without being part of the substance itself in which they inhere. Substances do not inhere in anything *(Cat* 3a6f). Aristotle divides all accidental entities into nine groups which are usually called categories, which form together with the category of substances ten ontological categories (cf. *Cat* 4). Each accidental category contains entities that are similar in a sense in the way in which they characterise and determine substances. Examples of the accidental categories are the categories of quality, of quantity, of place or of time.

Synonymous predication divides entities, substances and non-substances alike, into individuals such as Socrates or Bordeaux redness on the one side and universals of different generality, such as the species man, the genus animal or 'differentiae', on the other. A differentia is a feature that basically distinguishes a species within a genus, such as being rational which distinguishes the species human being from other animal

species. Aristotle introduces his conception of synonymy right at the beginning of the *Categories*. There he explains that two or more things (and not words) are synonyms just if they are signified by the same name "N," and the account that states what it is for each thing to be an N is also the same. Man and ox are synonyms insofar as they are both animals and in the same sense, i.e. it is the same for a man and for an ox to be an animal (though not to be the same specific animal). In contrast, two things are homonyms just if they share a name but the accounts associated with the names in each case are different. For instance, both a riverbed and a bed for sleeping are called "bed", but the account or the definition of what it is for each of them to be a bed is different. Further, something is called a 'paronym' in Aristotle insofar as it is referred to by a term that is derived from a name of something else. For instance, the grammarian, insofar as we call him so, is a paronym, for the term 'grammarian' is derived from the name 'grammar' (*Cat* 1).[7] The idea now of synonymous predication is that the subject and the predicate are synonyms with respect to the predicate, just as man and ox are synonyms with respect to animal. The account of the predicate, it follows, is also predicable of the subject. The species man, for instance, can be predicated of Socrates synonymously.[8]

(M) Socrates is a man.

For what it is to be for a man to be a man is to be, say, a rational animal. This is the account of man. We can substitute this account for 'man' in (M) salva veritate, getting:

[7] As I understand paronymity in Aristotle, there are some interesting commonalities with Kripke's theory of indirect reference. For many cases of indirect reference and among them typical cases of definite descriptions, for instance 'the inventor of bifocals', seem to be cases of paronymy. The inventor here seems to be a paronym of inventing. There are also controversial cases, such as the indirect reference 'the present king of France'.

[8] Note that Aristotle seems to say that the universal attributes rather than concepts are predicated of a subject. His way of talking makes sense given that he actually wants to speak of ways in which universals (as he conceives them) such as, e.g. qualities or quantities are connected (i.e. predicated) to their subject. And he seems to take sufficient precautions against confusion deriving from the daily life usage of language. I find his way of speaking useful and I will adopt it here. Other differences relevant here may be e.g. that for Aristotle the copula is not part of the predicate, while it is in Fregean logic.

(M*) Socrates is a rational animal.

Hence it is the same for a man and for Socrates to be a man. The account associated with 'man' is the same in each case. Man and Socrates are thus synonymously called 'man'. In this way, by substituting the account of the predicate for the predicate, it can in principle be determined, so the thought, whether a predicate is predicated synonymously or, in contrast 'paronymously'. Note, however, this is arguably not a test independent from empirical studies about what it is to be a man or a cow etc. Now, being white, for instance, cannot be predicated synonymously of Socrates but only paronymously. This becomes clear if we substitute the account of 'white' for 'white' in

(W) Socrates is white.

The account of 'white', what it is for 'white' to be white, will be something along the lines of, say, to be 'the brightest colour'. We cannot substitute this account of 'white' in (W) salva veritate, for it would get us

(W*) Socrates is the brightest colour.

So Socrates may be said to be white, and may even be referred to as the white one, but only paronymously in derivation from 'the white' in the sense of 'whiteness'. He is not so called synonymously (cf. *Cat* 1, 2a18-33). Man is a universal in the sense that it can, in principle, be predicated synonymously of many individuals, just like animal, which can in addition be predicated synonymously of many animal species. Likewise, colour can be predicated synonymously of a many different colour species (red, blue etc.) and individuals (e.g. Bordeaux red). Synonymous predication seems to apply intra-generically, it holds between certain entities within the same genus. It is also supposed to hold between a species or an individual of a species and the respective differentiae of that species, as Aristotle claims (cf. *Cat* 3a14-3b2). Note, however, that this claim is considered as a problematic one at least in parts of the literature[9]. Now, synonymous

[9] Ackrill (1963, pp. 85f, ad *Cat* 3a21ff) and Mann (2000, pp.192-4), for instance, hold that such a synonymous predication of differentiae with their respective species or specimen is a problem and may be

predication, as I have said, divides entities into universals and individuals. For what is individual (i.e. indivisible, 'atomos') and 'numerically one', Aristotle holds, cannot be 'said of' or predicated synonymously of anything else (though it may still inhere in something else) (*Cat* 1b6-9).[10] We cannot, for instance, predicate Bordeaux red or Socrates synonymously of anything else but themselves. Only universals can be predicated synonymously of something else and thus of several things. The exact conception of individuals in Aristotle is controversial in the literature, though it seems clear that individuals are at least characterised as ultimate subjects of synonymous predication. To be numerically one seems to mean that when we count the number of things belonging to a genus or a species, then individuals of that genus or species count as one. Socrates, for instance, counts as one object when we count human beings or animals. Bordeaux red counts as one object when we count colours or shades of redness. Individuals are ontologically more fundamental then their intra-generic universals for Aristotle. Fundamental simpliciter are individual substances, called also primary substances. The universal substances are ranked second, they are said of primary substances but they do not inhere in anything (*Cat* 2b36-3a13). This ranking should be understood only within the context of the *Categories*. In the *Metaphysics* Aristotle argues for a different ranking of substances, but he does so in a different context and between different candidates.

The system in the *Categories* is based on the distinction between synonymous predication and inherence and further on the division of the ten categories. It involves

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impossible contrary to Aristotle's claim. I am not convinced that they are right, but I cannot discuss this issue here.

[10] What an 'individual' ('*atomon*') means in the *Categories*, in particular what individual accidentals exactly are, is disputed in the literature. Particularists, as I call them with Harte (2010), hold that individuals are particulars, Non-particularists deny this. A particular accidental seems to be understood as a feature such as 'Socrates' paleness' that is unique to its particular bearer in the fashion of a trope. It is not repeatable in other subjects. This kind of particularity seems 'parasitic' on the particularity of the subject, such as Socrates, which are not predicable of anything else in any sense, contrary to universals. While there seems to be agreement that substance individuals are particulars, as Harte notes, the status of accidental individuals is what is controversial: are they particulars and non-repeatable or rather 'universal' in nature and repeatable (Harte 2010, 103f, Cohen 2015)? I for my part have been convinced, e.g. by Owen (1965) and M. Frede (1978), of the non-particularist view with respect to accidental individuals, but space does not permit for discussion here.

individuals and universals that are ordered into genera, their subdivisions and differentiae. It further privileges one category of entities, substances, over non-substances, since substances are the subjects of all non-substances. And primary substances, sensible particulars such as Beulah the cow, are most fundamental, being the subjects of all other entities. This is an important difference to Plato where the Platonic Forms, universals of a sort, are ontologically fundamental and not the sensible particulars. The taxonomy of the *Categories* provides the background for how essences can be defined, namely in taxonomical real definitions which state the genus and the differentiae of the species to which an essence belongs, or so I will argue. I will next introduce a slightly different conception of ten categories in Aristotle as we find it in the *Topics*. This will show that there is an implicit association in Aristotle between being an essence of an entity and being a substance of an entity ("substance" used here in a different, but related sense). And this will help in explaining Aristotle's implicit assumption that essences must be substances and thus ontological principles.

§I.2.2. Essence as the 'substance' of what something is in itself

The ontological classification of entities into ten groups in the *Categories* follows a division of basic kinds of predications or categories, as it is stated in Aristotle's *Topics*. In general each single category is referred to by a question-word, e.g. the quality category is called in Greek the 'of what sort' or the 'how featured' category, the quantity category is the 'how much' or 'how many' category etc. In place of an 'ontological' category of entities that are substances simpliciter as we have it in *Categories*, we have the 'predicative' category, so to say, of the 'what' something is in the *Topics*. The predicative categories in the *Topics* seem to be about respects in which a given entity can be investigated and characterised. Only substances can be characterised with respect to all predicative categories. They are the subjects of all entities from the other ontological categories and are thus ontologically fundamental. Substances are determinable in all these different respects. We can inquire what, where or how tall, for instance, Beulah is. We cannot do this, in contrast, with the other categories. It makes no sense to ask where yesterday is, or how tall the running is,

though in some cases there will be a meaningful answer such as the white is here. But then it is not the white as such that is at some place, but only accidentally because some white object is here. We can, however, ask of any given entity 'what' it is. Pointing at an individual colour and asking what it is, the answer will be, for instance that it is red and a colour and that it is also a quality (its ontological category). Asking what a human being is the answer will be that it is a human being, rational and an animal and also a substance (cf. *Topics* I.9, 103b20-104a1). The 'what' category is thus special since it applies to all entities. And it seems closely associated with the substance of an entity.

The term 'substance' [*ousia*] is used in two related ways in Aristotle, as I have already indicated. As a monadic predicate ('Sx', 'x is a substance') it signifies a substance in the absolute sense of the *Categories*, it is a fundamental entity, such as Callias. In another sense substance means what some given entity is. It is used as a dyadic predicate here ('Sxy', 'x is the substance of y'). For example, being a colour is part of the substance of Bordeaux red, for that is part of what it is according to Aristotle. To be a substance in this relative sense is related in Aristotle to the question of what something is and it is thereby linked to the concept of essence. The essence, or to use Aristotle's expression, the 'what it was for something to be that thing', is what something is in itself in a sense, as I will expound. In (*Met* 1028b33-35) Aristotle states explicitly that the essence, besides other rival candidates, is thought to be the substance of each thing. In (*Top* 139a28-30) Aristotle notes that "… of the elements of the definition the genus seems to be the principal mark of the substance [*ousia*] of what is defined; […]". In the context of the *Topics* the definition signifies the essence of an entity (*Top* 101b37f), and thereby, as the quote shows, its substance. Essences, conceived as substances of entities, are thereby conceived as principles of being. For that is what the term '*ousia*', a nominalisation derived from the Greek word for 'being', expresses: the fundamental being or the being itself. Since essences are what something is (in a sense) and what something is is the substance of an entity, an essence is a substance in this relative sense, i.e. the substance of an entity. Since essences of substances in the absolute and ontological sense ('Sx', monadic predicate) are substances of substances, these essences are natural candidates for being themselves not only substances in an absolute but even in a primary sense, as Aristotle argues in his *Metaphysics*. They are fundamental entities.

§I.2.3. Essential, proper and accidental predication

> "And first let us say something about it [the essence] in the abstract [*λογικῶς*]. The essence of each thing is what it is said to be in virtue of itself [*καθ' αὑτό*]. For being you is not being musical; for you are not musical in virtue of yourself. What, then, you are in virtue of yourself is your essence.
> But not the whole of this is the essence of a thing: not that which something is in virtue of itself in the way in which a surface is white, because being a surface is not being white." (*Met* 1029b12-18)

Aristotle clarifies in this passage in the abstract mode (*'λογικῶς'*) that the essence of each thing is what that thing is in virtue of itself or just *in itself* (*'καθ' αὑτό'*), but only in one possible sense of 'in itself'. In *APo* 73a35-b17 he distinguishes in total four senses of 'in itself'. In one sense it applies to substances which are entities in themselves as opposed to non-substance entities inhering in a substance. There are a further three senses of what it means that some A 'holds of' some B in itself (i.e. as B). Two of them refer to two distinct ways in which it can be said that A is predicated of some B in itself, which are both opposed to what is predicated accidentally:

> "Something holds of an item in itself both if it holds of it in what it is – e.g. line of triangles and point of lines (their essence [*ousia*] comes from these items, which inhere in the account which says what they are) – and also if what it holds of itself inheres in the account which shows what it is – e.g. straight holds of lines and so does curved, and odd and even of numbers, and also prime and composite, and equilateral and oblong: in all these examples, there inheres in the account which says what they are in the former cases line and in the latter number. […]. What holds in neither way I call incidental, e.g. musical or white of animal." (*APo* 73a35-73b5, trans. Barnes 2002)[11]

Aristotle uses a technical phrase here to speak about predication translated usually as 'A holds of B' or 'A belongs to B' ['A *ὑπάρχει* B']. In this phrase the grammatical position of predicate and subject are reversed: 'A is B' becomes 'B holds of A'. The reverse

[11] This use of A 'inhering' in the account of B in the translation is different from the sense of 'inherence' I use in contrast to synonymous predication.

direction is not always possible though. Line belongs to triangle in Aristotle's view, but a triangle is no line. So there may be different ways in which B belongs to some A, not necessarily because B is a genus or a differentia of A. 'In itself' means the same as 'as such' or 'qua itself' [ᾗ] (cf. *APo* 73b29-33) and seems to refer as a rule to the logical, but not necessarily grammatical subject. So if A is the logical subject, I read

'A is B in itself' as 'A as A is B.'

and

'B belongs to A in itself' as 'B belongs to A as A'.

Now, Aristotle distinguishes two cases of belongs to 'in itself' in quote (2):

(es) A belongs to B as B, because A is part of the substance and account of what B is.

(pr) A belongs to B as B because B is part of the substance and the account of what A is.

An example for (es) is that line holds of triangle as triangle because line is part of the account of what a triangle is and thus of its substance in the sense of essence. This is the case that Aristotle has in mind when he says in the quote above, that the essence of each thing is what it is said to be in itself, what is part of its definition. An example for (pr) is that straight holds of line as line because (reversely now) line is part of the substance or essence of straight and part of the account of what straight is. This is the contrast case mentioned by Aristotle in the quote above: surface is white in itself, because surface is part of the definition of white (and not white of the definition of surface). I will refer for ease of reference to cases of in itself predication falling under (es) as essential predication and I will speak of essential predicates. I will speak of 'proper' predicates and 'proper' predication or that A holds 'properly' of B in cases falling under (pr). Proper predicates are either so-called propria or part of a contrast class of features that together form a proprium such as straight-or-curved of line. A proprium is an entity that holds always and exclusively of a given kind of subject. An

example given in the *Topics* is that it is a proprium of man to be capable of learning grammar (*Top* 102a17-31).[12] Being coloured would be a proprium of body (with respect to its surface). Other proper predicates hold exclusively but not always. Being odd is proper to number, as is being even. But not all numbers are odd, nor are all numbers even. However, all numbers are odd-or-even, and this is a proprium of numbers. I will call the subject of a predicate that is either a proprium or a component of such a proprium, such as straight of straight-or-curved, of the subject, the 'proximate subject' of the predicate. We can then say that a predicate is essential, because it is in some sense part of the definition (whatever that includes) and the substance of the subject. And a predicate is proper because the proximate subject is part of the definition and the essence of the predicate. Essential predicates and propria hold of necessity of their respective subjects (cf. *APo* 73b18-24, 75a29-32). Aristotle contrasts in itself predications in *APo* 73a24-73b2 with accidental predication:

> (ac) A belongs to B accidentally iff A belongs to B but neither essentially nor properly

A belongs to B not insofar as B is B but in some other respect. Aristotle's examples are that both musical (i.e. educated) and white belong to animal accidentally.

Aristotle's explanation of in itself predications involves reference to definitions. I will next address taxonomical definitions, which specify kinds of essences, as they are explained in the *Topics* and other passages in the abstract mode.

§I.2.4. Taxonomical definitions

In the *Topics* Aristotle characterizes what a 'definition' is, though he seems actually to speak of the definiens only rather than a whole proposition that is a definition. A definition in this sense is an account that signifies an essence (*Top* 101b37-102a8). It is

[12] Aristotle distinguishes such propria simpliciter from predicates that are propria (i.e. peculiarities) only in a restricted sense. E.g. that Adam was the only man alive was only a temporary proprium of his. Being biped is a proprium of human beings relative to horses but not to birds etc.

a comprehensive account that answers the question what something is and enables one to know the entity under consideration. It has therefore to be concise and explanatory of that entity, and this means in particular that it has to specify what an entity is in terms that are prior and more knowable epistemically than the term signifying the entity in question (*Top* 140a23-b2, 141a26-141b3). Note that Aristotle acknowledges two senses in which something can be prior and more knowable, namely in relation 'to us' or 'by nature'. The former sense refers to what is closer to perception. More knowable and prior to us are the individual things that can be perceived. More knowable and prior simpliciter or by nature is what is most universal and furthest away from perception (*APo* 71b35-72a6). When Aristotle speaks of the terms in a definition as being prior and more knowable, he seems clearly to mean prior and more knowable by nature and not 'to us'. An entity can only have one essence and hence only one definition that explains what it is (*Topics* 141a26-141b3, 141b6-9). Propria are exclusive to an entity, but they are not part of the definition, because they do not explain what something is. Being coloured, for instance, holds of all and only bodies, but it does not explain what bodies are. It is thus only a proprium and not part of the essence. A taxonomical definition in general constitutes a comprehensive answer to the question what something is in terms of genus and differentia, which define a species form (*Top* 101b17f, 102a31-35, 141b23-29). Aristotle even states at one point explicitly that only what is a species of a genus will have an essence and thus a definition. He also states in this context that strictly speaking only substances have essence, while non-substance entities have essences only in a derivative sense (*Met* 1030a2-25). These claims require some explanation.

Aristotle's idea seems to be, for one, that only substances are fully definite beings, a 'this' or (τόδε τι) as Aristotle says. The being of non-substances, what they are, always involves an underlying subject in which they inhere. A non-substance is thus as such not fully definite, it is not delimited, so to say, against its proximate subject, the kind of substance in which it inheres. That subject is always implicit in the being of a non-substance. What is a non-substance will thus depend on the proximate subject and its essence. Since an essence is the substance of a thing, and a substance is a principle or beginning, the essence of the subject will be a principle properly speaking, while the 'essence' of a non-substance, what it is, will presuppose another principle and thereby

not be a principle strictly speaking. Thus only substances have essences (i.e. substances qua ontological principles of an entity) strictly speaking. Though in a derivative sense also non-substances such as colours or magnitudes have essences and definitions in Aristotle, since, I assume, also non-substances have something original about them. Being a colour, for instance, cannot simply be reduced to being a body. It is something beyond the latter but based on it. Aristotle's claim now that only species will have substances serves here to contrast it with cases of entities where one thing is predicated of another such as 'white cloak' or implicitly non-substance. The main point is that a species of a substance is not something implicitly complex in the sense that the differentia is not predicated of the genus as an underlying proximate subject. An animal is said to be rational not qua animal, but because it is a human being. What needs further clarification here is that it is not species as universals that have essences, but particular substances such as Callias. This becomes clear from what Aristotle says about substances in general, as I will expound below. The idea seems rather to be that, for instance, Callias' essence and Socrates' essence are qualitatively identical, though numerically distinct. Their essences are the same kind of principle, that of human being. They thus share the same definition. Note here also that there is no definition (taxonomical or explanatory) of sensible particular substances such as Callias in the sense that it individuates Callias on Aristotle's view (cf. *Met* 1039b20-1040a7).

To sum up, essences are signified in taxonomical definitions in terms of genus and differentia and strictly speaking only substances have essences. The intimate association of essence with definition suggests that an essence of a particular object is conceived as the substance of that object but as it is analysed into its basic elements whereby we come to understand that substance and what that object is. Aristotle's conception of essence is in this sense analytic and associated with scientific understanding.

I will next discuss briefly Aristotle's peculiar expression for essence, before I turn to the hylomorphic principle in Aristotle's essentialism.

§I.2.5. Essence as the what-it-was-for-each-thing-to-be-that-thing

Aristotle uses a certain technical phrase or short forms of it to signify the essence of something. This phrase reads in its complete form, for example with respect to human beings, as the 'what it was to be for a human being to be a human being' (cf. F/P 1988, I. p. 19).[13] This expression raises a number of interesting philological questions. For instance, why does Aristotle use the imperfect here ('what it *was* to be') rather than the present, and why this dative construction ('*for a human being*')? I will not be able to address these questions here, but I want to suggest briefly here the view that this peculiar expression for essence, or rather the underlying 'logical mechanism', is a flexible and sharp tool of analysis.

The generalised question underlying the nominalisation that is the expression for essence seems to be

(i) What was it for A to be A?[14]

This question is obviously related to and a special form of the question

(ii) What is A?

Aristotle does not pose questions of type (i) to begin an investigation, but of type (ii). He starts, for instance, his investigation about the soul by asking what the soul is, and not by asking what it is for a soul to be a soul (cf. De An 402a10-2, 23-5). But it is this question (i) that underlies the nominalisation that is translated as "essence," and as it seems the refined characterisation for the adequate answer to the question what something is. Question (i) seems to disambiguate the sense of 'to be' as the sense of synonymous predication, or of identity, while the sense of inhering predication is

[13] I abbreviate in this way '(F/P)' reference to M. Frede and Patzig 1988, 'I.' or 'II.' means volume I. and II.

[14] Ross (1924 I. ad *Met* 983a27) seems to agree with me, while Bassenge (1960 p. 19-21) points out that there is an alternative interpretation, that conceives Aristotle's phrase for essence as a nominalisation of 'to be', the 'εἶναι', rather than of the 'what'.

excluded. Question (ii) has not the same unambiguous focus of 'to be'. This can be observed in many Platonic dialogues where usually Socrates typically asks what something is, for instance what justice is or what it is to be just as in the *Republic* (*Rep* 336a, 358b). Socrates' interlocutors regularly offer as a first response to such what-questions examples, for instance examples of what is just, instead of trying to formulate a definition. They will say, for example, that to be just is to give back what was borrowed (*Rep* 330d-331c). This is clearly an example of an action type that can be characterised as just but it is not a definition or a definitional part of what it is to be just. Socrates points this out by a counterexample. It is not just to give back a sword to a friend from whom it was borrowed, when the friend is in a state of insanity, for in that state the friend will likely cause himself or others harm with the sword (*Rep* 331cd). To be just cannot thus be the same as to give back what is borrowed. My point is that it seems in principle acceptable to answer the question what it is to be just not merely by stating a definition but also by giving examples. This seems not to be a category mistake, as if we answered 'over there' to the question what time it is. It is rather one informative way to answer that question, though not the demanding way Plato is asking for, namely a definition. If we pose the question according to (i), however, as *what is (or was) it for just to be just*, then giving examples seems inacceptable. To say that for just to be just is to give back what one borrowed seems to equate being just with giving back what was borrowed, as if they were one and the same. But this is false. The logical mechanism of question type (i) seems to demand here that an adequate answer must be something that is predicable synonymously of just. And this is so in the case of the definiens, which includes the genus and the differentia, or a part of it. We can adequately and truthfully answer, for instance, that for just to be just is to be a virtue of some sort. So (i) seems to have a restricted and more precise scope of what counts as an adequate answer than (ii), it aims unambiguously at a definition of something.

In sum, Aristotle's expression for the essence of something is a nominalisation of a refined analytical question, and as such it refers to the refined analysed answer to that underlying question. And that answer is the taxonomical definition in the case of a species.

§ I.3. Essentialism under the Hylomorphic Principle

So far I have expounded Aristotle's essentialism in the abstract mode and under the taxonomical principle as I called it. This part is about essentialism in the (meta)physical mode and under the hylomorphic principle, where things are conceived in terms of the four causes, matter and form, and potentiality and actuality. I have argued that the essence of a particular object, and in the strict sense of a particular substance, is the substance, the ontological principle and cause, of that object in a sense. But the question remains what this exactly amounts to. The importance of this question becomes clear by looking at Plato's *Timaeus*, where the Platonic Forms are conceived as the substances of things in the sense of what they are. But there are problems, at least from Aristotle's perspective, about how Forms can actually be ontological causes and thus substances of sensible particulars. These problems are the background for a more general aporia that Aristotle is centrally concerned with, namely whether substances are universals such as Platonic Forms or rather particulars such as Callias. Aristotle deals with this aporia by arguing that the essences of sensible particular substances are the substantial forms, i.e. the forms of these substances, and further that also the matter of these particulars is their substance in a sense. He further explains through the association of essences with substantial forms how essences can be literally causes and principles of being, unity and also of motion, something that Plato could not explain with his Forms, according to Aristotle. Aristotle also speaks of essences of natural phenomena, which are not substantial forms but external causes, as I will explain.

I will start with presenting Plato's conception of Forms as we find it in the *Timaeus*, the ontological roles that they are assumed to play there, and the problems with Forms as substances and causes of concrete particular objects (§I.3.1.). These problems form a central part of the dialectical background that explains Aristotle's motivation for his conception of essences as a unifying, motive cause. I will elaborate that and why essences in the strict sense are conceived as physical causes, in particular as substantial forms, 'natures,' and 'souls'. Aristotle's conception of essence as forms and causes is closely connected to his conceptions of change, potentiality, and actuality. It is in these terms, with essences as principles of orderly motion, that Aristotle explains the causal structure and natural order of reality (§I.3.2.). I will finally discuss the

explanatory kind of definition, as I call it, where essences assume the part of a unifying cause, relate it to the taxonomical kind of definition and to demonstrative understanding (§I.3.3.).

§I.3.1. Problems with Platonic Forms & the status and roles of essences

There are many dialogues where Plato speaks of Forms, but in the *Timaeus*, a late dialogue, their ontological role becomes particularly salient. So in the *Timaeus* (*Tim* 48e-52b) Plato distinguishes different principles that constitute reality, among them the Forms. The Forms are characterised, there and in general, in contrast to the many sensible entities (i.e. concrete bodies, individual animals and colours etc.). The Forms are a kind of universals. They are characterised as being eternal and unchanging. They cannot be affected and do not come into being nor do they perish. They cannot be perceived, but they can be grasped by reason, they are intelligible. Of Forms there is understanding or knowledge, which involves an account that states the reason why something is as it is. Sensible particulars, in contrast, can be perceived with the senses. They change, come into being and perish and they are the objects of opinion. Forms have 'being', whereas sensible entities are what is 'becoming' (and perishing). The relation between the two is such that the sensible entities 'participate' or 'share' in the universal Forms and thereby have being derivatively and in a lesser sense (e.g. they are not eternal). In the *Timaeus* Plato describes this participation relation in terms of a model and its images: the Forms are eternal and perfect models, the sensible entities are images or copies of these models. The many instances of beauty, for example, are all images of the Form of beauty or of beauty in itself. The many mortal men are images of the Form of man. The Forms are conceived not just as perfect models, but also as the source or cause why the sensible particulars become or come into being as the image of their respective Forms. The conception of Forms as eternal, unchangeable models suggests that Forms are in a sense independent of their 'instances'. This is at least the way in which Aristotle seems to understand the Platonic conception of Forms, namely that Forms are 'separate', as he says.

There is another relevant principle of reality in the *Timaeus*, namely the so-called 'receptacle'. The receptacle is that wherein physical entities become and perish. The receptacle itself is invisible, unshaped, all-receptive and hence itself as such devoid of any characteristics. It seems to be Plato's conception of raw, unformed matter, though he also seems to associate the receptacle with space and speaks of it as a single thing. The sensible entities (e.g. trees, rocks, men) are constituted in some way by the receptacle on the one side and by the Forms on the other. They are images of the Forms 'imprinted' in some part of the one receptacle. Relevant here is to note that the characterisation of the participation relation as one between eternal models and their images seems rather metaphorical. For, it is not clear how exactly the sensibles 'share' in the respective Forms if we take Plato's account literally. Plato himself seems aware that this relation so conceived is in need of further explanation, for he notes:

> "The things that enter and leave it [i.e. the receptacle] are imitations of those things that always are [i.e. Forms], imprinted after their likeness in a marvellous way that is hard to describe. This is something we shall pursue at another time." (*Tim* 50c, transl. by Zeyl).

Plato does not further explain in the *Timaeus* what this 'marvellous' or rather puzzling way exactly is in which the images of the Forms are 'imprinted' in the receptacle to constitute the many sensible objects. It is this 'marvellous' way, though, that Aristotle seems much concerned with. The reason is that the ontological status of Forms seems incompatible with the ontological roles (and even epistemic roles) they are meant to play. These ontological roles in the *Timaeus* are about being and becoming. Forms are supposed to cause the sensible entities to come into being, e.g. why Callias came into being or why he became pale and why this instance of paleness 'came into being'. Forms are also the causes of sensible entities having some kind of derivative being at all, why, for instance, Beulah *is* a cow, namely by participating in the respective Forms. These are the ontological roles Forms are supposed to play. The reason why they have to play these roles seems to be that they are in Plato's view what the sensible entities are. What is Socrates? - a human being. What is 'human being'? – a Form. The point here is that essences in Aristotle have to play the same roles for the same reason. If essences are what something is, and if this means that essences are somehow the being

or the substance of their respective entities, then essences must be ontological causes or principles. Plato's Forms are his candidate for what something is. Aristotle argues for another candidate, but his expression for 'essence' alone does not yet specify or explain what this candidate and rival to the Forms might be.

The ontological role of essences as causes of being has a further aspect. Aristotle connects being closely with unity, explicitly so in *Met* 1003b23-1004a9, where he also states that the essence of each thing is one and not merely in an accidental way. If being and being one entail each other, then being the source of being entails being the source of unity of an entity in some sense. So the ontological role associated with Forms is to be causes for being, for unity and for the coming to be of the many sensible entities that share in them and insofar as they share in them. Forms play also an epistemological role. It is by grasping them and the relations among them that one also acquires knowledge in the sense of scientific knowledge, about the sensible particulars. Knowledge comprises for Plato an awareness of what is unchanging and eternal and hence necessary in a sense. For Forms to play these epistemic roles it seems they must be universal, unchanging and eternal. Otherwise awareness of Forms could not be about necessary, unchanging truths that enable us to subsume different particular cases under them. Forms are conceived in Plato as the subject of knowledge, because they are changeless universals. They are also conceived as substances of the concrete sensible particulars. Aristotle criticises that it is not possible for Forms to play both roles, indeed neither of them. A central problem is that in order for an entity to be causally active requires that this entity is a particular and suitably connected to its effect. Aristotle argues that Forms fail to do so (*Met* 1071a17-23). This claim is plausible, for it is *prima facie* not clear how an eternal and merely intelligible universal that is distinct from its instances can be the cause of the being or becoming of its instances. How does it act on or even relate to them? There is no comparable difficulty to see how sensible particulars, such as Callias, or a certain fire, can be possible causes. Callias is somehow the cause of his son, and the fire here is the cause of my being warm. But if Forms are causally inert with respect to their instances, then they seem not to be the substances of these sensible, concrete particulars that are their 'instances' or 'images'. In consequence there is also no reason why knowledge of Forms would also provide an understanding of the sensible particulars, since they are not causally connected (cf. e.g. Met M.5).

Aristotle holds for these and other reasons that universals such as Forms, and hence also species and a genera, cannot be as such the substances of concrete, sensible particulars (Met Z.13). The question now is what kind of things are essences in Aristotle such that they can be ontological principles of being, unity and becoming, and also epistemic principles?

§I.3.2. Aristotle's conception of change and essence as 'form', soul, and substance

Aristotle inquires in *Metaphysics* books Z, H, Θ what substance, the cause of all being, is and what it is to be substance. He narrows the question by dismissing non-substance entities as not fundamental and by focusing on concrete sensible substances, which are generally accepted as substances. He then inquires what the substance of sensible substances is. He introduces two commonly accepted characteristics of being a substance. One is to be separable, which seems to mean not to inhere itself while possibly being an ultimate subject of inhering predicates.[15] The other is to be a '*tode ti*', which seems to mean to be a certain kind of individual in some definite sense (*Met* Z 1-3). He goes on in *Metaphysics Z* to discuss different candidates for being the ultimate substance and dismisses rival candidates in particular Platonic Forms and also 'matter', as most natural philosophers hold. Now, the initial focus from *Met* Z 3 onwards lies on substance as being separate and an ultimate subject of predication or a substrate:

> "And so we must first determine the nature of this; for that which underlies a thing primarily is thought to be in the truest sense its substance. And in one sense matter is said to be of the

[15] The meaning of this notion is controversial. I cannot argue properly for my interpretation here, which is different from all interpretations I am aware of. Just one point to motivate my view: when Aristotle qualifies substances as being separate in *Met* 1028a32-b1 (choriston, translated as 'independent' in the Complete Works) he does so in contrast to non-substance entities and in the abstract mode. In the *Categorie*s he characterises non-substances as being in (i.e. inhering) in substances but not in the sense in which a part is in a whole, and he further characterises to inhere as not being separable from one's (kind of) subject (*Cat* 1a24f). So I think that separation means here not to inhere, and this amounts to being an ultimate subject of predication in the sense of inhering. What is separate does not inhere, but other entities may inhere in it.

> nature of substratum, in another shape, and in a third sense the compound of these. […] We have now outlined the nature of substance, showing that it is that which is not predicated of a subject, but of which all else is predicated." (*Met* 1028b37-1029a8)

What is an ultimate subject seems to be an ontological cause of itself, there is nothing prior that causes an ultimate subject to be (it is 'separate' in this respect). By this criterion alone matter would be the substance. Matter in Aristotle is in general always conceived relative to some concrete individual that consists of some matter and some substantial form. So Socrates' flesh and bones are part of his matter. Matter as such, conceived in abstraction from any form and concrete individuals, is the featureless principle of change in the sense of what has the underlying potentiality to change and to become a certain way (*Met* 1028b37-1029a33, *Phys* 194b23-27). Important here is that even though matter seems to be an ontological principle in the sense of a substrate of change and being, this does not qualify it as being the substance of everything else. Matter fails to be *the* substance and also substance in a primary sense among others kinds of substance, since it is as such nothing definite and individual in the sense of a '*tode ti*'. The underlying thought seems to be that reference to matter alone cannot explain sufficiently the causal connections among sensible entities and why individuals are individuals. For example, reference to the flesh or to the blood etc. constituting a cow does not sufficiently explain why that cow is a cow and not rather a sheep or no animal at all but an aggregate of things. Reference to matter alone does not explain sufficiently why a cow comes into being or why a mother cow begets an offspring cow rather than an offspring bird (cf. *Met* 1029a8-33, *Phys* 193a10-b18, *PA* 641b24-37). So matter, while being an ontological principle in a sense and thus substance in a sense, cannot be *the* substance. The second rival candidate for being substance in a primary sense is the universal and Platonic Forms are a special case here. Aristotle rejects this candidate for being substance as well:

> "… in general nothing that is common is substance; for substance does not belong to anything but itself and to that which has it, of which it is a substance. Further, that which is one cannot be in many things at the same time, but that which is common is present in many things at the same time; so that clearly no universal exists apart from the individuals." (*Met* 1040b22-27)

Aristotle holds that substance cannot be what is common to many things. It only belongs to itself and the entity which has it. This seems another way of pointing out that substances must be particulars in order to be ontological causes for particulars and particular events. On this ground, and by pointing at otherwise absurd results, he argues that Platonic Forms and universals as such cannot be substances (cf. *Met* book Z 13-16, book M 9-10 1086a30-b12). The remaining candidate is essence. Aristotle identifies essences with forms and argues that forms are substances in the primary sense, before matter and the compound substance. Aristotle conceives forms not as separate in the sense in which matter is separate. They are not ultimate subjects of predication simpliciter, since they inhere in matter. Aristotle argues however, that forms are '*tode ti*' and separate in account. What this means will become clearer in the following sections.

Aristotle's discussion in *Metaphysics Z* mainly focuses on predicability and universality. From this discussion, however, arises a problem. For substances are thought to be both ontological and epistemic principles and the latter seems to require on the face of it that substances are in some sense universal or common to many things and definable. This is so, because the subject of knowledge or science (episteme) is a system of relations represented in terms of connections of universals or of quantified predicates. But this seems to be at odds with the demand that substances belong only to themselves and to the one thing of which they are the substance. In reaction Aristotle takes a new approach from *Met* Z.17 onward to book H and Θ to explain how essences and forms can be primary substances after all (cf. Charles 2000, pp. 283f). Aristotle now focuses on the role of substances as causes and principles of becoming, being and unity (cf. *Met* 1041a6-b34, 1045a7-b7):[16]

> "We should say what and what sort of thing, substance is, taking another starting-point. […] Since then substance is a principle and a cause, let us attack it from this standpoint." (*Met* Z.17 1041a6-10)

[16] Aristotle already discusses essences as forms and causes of change to some extent in *Met* Z.7-9. These chapters seem to have been inserted ex post to the end to provide information required for discussing definitions in *Met* Z.10-11 (cf. F/P 1988 I. pp. 24f). No new approach is undertaken, though some central claims, such as that essence is form, are already stated there (e.g. *Met* 1032b1f, 1032b14f).

This new causal or explanatory approach should solve the central problem that substances should be both particulars in order to be causally active and universals, as it appears, in order to be definable and knowable. The problem again is that a universal is predicated of many things, while an individual is not predicable of many things. So it seems that (primary) substances must be both predicable of many things and not be so; they must be shared by many things and not be so (cf. *Met* Z 13-16, M 10). Plato held that substances are universals and Forms and from this the problem followed how Forms are connected to matter and how they can be causally active at all. Thus Aristotle has to explain how his forms are connected to matter and in what sense forms are causally active. He must further show why and in what sense forms, which are introduced as physical principles explaining *why* something is, can be identified with essences, which are about *what* something is. There are further questions involved, for instance, if essences are principles of unity, then they should themselves be unities. But how does this fit with their being defined in terms of many things? Why is to be a biped, rational animal (if this is the form of man) to be one thing and not many? To be an educated, pale man seems to involve several things in a sense in which being a biped, rational animal does not. In other words, why is a definition about one thing and not about many? (cf. *Met* Z. 4 1029b22-30a18, Z 12 1037b9-28, H.6). These are the problems that constrain Aristotle's conception of essence. If the abstract notion of essence under the taxonomical principle were Aristotle's whole essentialist account, then the ontological import of essences would remain as unclear as it is in the case of Forms in the *Timaeus*.

I will expound in the following how Aristotle conceives of forms such that they can be principles of being, unity and becoming and at the same time epistemic principles. I will start with an exposition of Aristotle's conception of change and the physical principles involved (§I.3.2.1). I will then expound the dominant role of forms in change (§I.3.2.2) and address then the case of natures as the forms of natural substances (§I.3.2.3) and the role of forms as principles of being and unity (§I.3.2.4). I will then outline how forms, which are individuals for Aristotle as I interpret him, can be defined and be objects of knowledge which seems to require them to be universal in a sense as well (§I.3.2.5.).

§I.3.2.1. Aristotle's basic conception of change

> "Of things that come to be some come to be by nature, some by art, some spontaneously. Now everything that comes to be comes to be by the agency of something and from something and comes to be something. And the something which I say it comes to be may be found in any category; it may come to be either a 'this' or of some quality or of some quantity or somewhere" (*Met* Z.7 1032a12-15)

Aristotle expounds his basic conception of change in his *Physics* (Phys I.7, II.3 and III.1-2), but he also elaborates on it elsewhere such as in *Met* Z.7-9. In all change, Aristotle holds, there is involved something that underlies change, a substrate [*hypokeimenon*] that persists through the change and not accidentally so. Aristotle uses the same word '*hypokeimenon*' also in his abstract writings where it is usually translated with 'subject' of which things are predicated. This seems not to be a coincidence and I will assume here as a rule that any subject is a substrate and vice versa in Aristotle. The subject of change has the potential to be determined in some respect(s) in different, contrary ways. Aristotle's overall notion for change, *'μεταβολή,'* denotes just this, the end of one contrary state and its replacement by another contrary state. It includes as a kind of change motion (*κίνησις*), which denotes not merely the emergence of a new state of affairs but comprises also the process that leads to that new state of affairs (cf. Waterlow 1998 pp. 94-96). Change can take place in respect of at least four categories: alteration is a change of quality, increase and decrease are changes of quantity, and locomotion is a change of place – these are kinds of non-substantial changes. Substantial change or change simpliciter refers to the coming and ceasing to be of substances. The substrate of non-substantial change is a particular sensible substance. Aristotle uses frequently examples of artefacts to clarify his view on change and being in the case of natural substances (animal, plants, and their parts and elements and combinations of them). A case of non-substantial change would be, for instance, when Callias turns from being not pale into being pale. In the case of substantial change, when a substance comes into being or ceases to be, the substrate is some material such as bronze or flesh or earth. That out of which something comes to be and which persists is the material cause of change. In the case of substantial change this cause is usually

called ‘matter’. The contrary determination that emerges in a change is the formal cause of change. In the case of substantial change Aristotle speaks usually of forms as the formal cause, though he also speaks of forms sometimes in reference to non-substances (e.g. paleness, softness). Aristotle also speaks of matter and form with respect to any thing that is in some sense a kind of whole and unity, such as artefacts, geometrical figures, natural phenomena or syllables. Even though these things seem not to be substances strictly speaking for Aristotle, they are in interesting respects similar to substances.

Now, substantial forms or just forms (as opposed to ‘non-substantial forms’) are in general understood in relation and opposition to matter. Aristotle characterises the formal cause in general as the ‘whole’ and the ‘combination’ and the ‘archetype’ and associates it with essence and definition (*Phys* 194b28-29, 195a15-21). This variety of terms already suggests that the conception of a form is differentiated and not a simple one. It seems thus helpful to be aware of the different characteristics of formal causes. First, the formal cause of substances and wholes is what ultimately makes some underlying matter (broadly construed) to be some definite kind of thing and to be distinct from other kinds of things. Second, forms inhere in an appropriate, suitable substrate or matter, which has a specific potentiality for that specific form or actuality. Third, there are different basic kinds of forms, so to say, with specific ranges of differentiating features, and these kinds of forms correspond to different basic kinds of unity of things. Aristotle gives several examples for such differences in basic kinds of forms (cf. *Met* H.2) In the case of honey-water, for example, the differentiating formal cause will be the mixing of it according to a certain ratio. In the case of syllables the differentiating form will be the specific kind of arrangement of the letters. Of books it will involve being glued together. The differentiating forms of biological organisms will be some specific kind of organisation of the matter (blood, bones etc.). Further, the form need not always be the shape or the actual ‘geometrical’ composition in which material components are placed in relation to each other. For example, the kind of unity possessed by artefacts, which involves the ranges of features that differentiate one kind of artefact from another, refers ultimately to their purpose and end. So in the case of, say, houses we need to distinguish between their ‘form’ in the sense of their actual shape (e.g. bricks put together in a circle and on top of each other etc.) and their form in

the sense of the formal cause, namely to serve as a shelter for human beings. The form as end determines and constrains the possible 'forms' as shapes of a house. For Aristotle, forms of substances are causes in the sense of ends as well, and a similar distinction between determining form and determined 'form' needs to be made here too.

The principles of change so far expounded, i.e. form and matter, are also principles of being. The so-called doctrine of hylomorphism seems to be essentially the view that certain kinds of entities, concrete 'wholes' in some sense, are composed of some matter and some form. This doctrine applies paradigmatically to natural substances such as biological organisms, but only in a limited sense to the elements, since elements are as such not organised into some whole. Whatever is a sensible 'whole' in some sense, however, has as such some distinguishable substrate or matter as a principle of potentiality and some form as a principle of actuality of how the matter is organised.

§I.3.2.2. Causation of becoming and the transference of forms

There are two further kinds of causes that complete Aristotle's basic conception of change: the primary source of motion, usually referred to as the efficient cause, and the end, 'that for the sake of which' or the final cause. Aristotle distinguishes two primary cases of change: change by art and change by nature. And he often explains his views with examples of art. But his views are also intended to hold in particular in cases of natural change. It is central for Aristotle's essentialism that substantial forms, which are the essences of particular substances as Aristotle holds, play a central causal role in the natural order. And that is why forms in general are also intimately involved in Aristotle's conception of efficient and final causation. I will also expound Aristotle's views first by examples of artificial change, and then show how the same theory is supposed to apply also to natural change.

In a simple case of change a craftsman has a certain 'active' potentiality to effect a change in some hylomorphic patient that has a corresponding 'passive' potentiality to be changed. The result aimed at is a certain kind of (non-substantial) form in the patient that defines the change in question as the kind of change it is. In *Met* Z.7 Aristotle gives

the example of a physician who has the potentiality to effect a change in a patient, i.e., to heal a sick person that has the potential to be affected accordingly, i.e., to be healed. The physician can rub the patient's body to produce warmth in it, and this in turn sets in motion a process directed at a certain form, namely health in the patient. Given that health is where the change is directed, it is a process of healing. The efficient cause, the agent, seems conceived here, just as the patient, as a hylomorphic entity itself, namely the physician. As such the efficient cause can itself be subject to change, and by effecting a change in a patient the hylomorphic agent also undergoes change. It is, for instance by rubbing with his arms that the physician instils warmth in the patient, but thereby also in his own arms. The efficient cause can be called a 'moved mover' here, i.e. a cause of change that is itself changeable and changed in the change. This notion is relevant in contrast to ultimate causes of change in the sense of being 'unmoved movers'. Unmoved movers may also be said to be efficient causes in the sense that they are also 'sources of motion'. In particular, essences of biological organisms, their souls, are such unmoved movers that are the source of motion and rest of an organism's life. But Aristotle seems to speak in the case of essences rather of final causes (and forms) than of efficient causes, and he distinguishes them clearly:

> "… - the matter, the form, the mover, that for the sake of which. The last three often coincide; for the what and that for the sake of which are one, while the primary source of motion is the same in species as these. For man generates man – and so too in general, with all things which cause movement by being themselves moved;…" (Phys 198a24-27)

The efficient cause is one only in species with the what, i.e. the form, and the 'that for the sake of which', i.e. the end. The idea seems to be that the parent, an efficient cause and compound substance, is, say, human (due to its human soul) just as the essence of the offspring, its form, end and soul, is human. The efficient cause seems different from the final and formal cause in that it is a cause 'external' to the affected patient,[17] such as the parent causes the coming into being of the offspring. And it seems that it causes

[17] Being external does not require here different entities, it suffices that one entity acts on itself but in a different capacity, like a person qua doctor acts on itself qua patient. Here the efficient cause is also 'external' in the sense I use it here.

movement by being itself moved, as Aristotle says in the above quote. Forms and ends, which Aristotle associates in a sense, are in contrast immovable:

> "Now the principles which cause motion in a natural way are two, of which one is not natural, as it has no principle of motion in itself. Of this kind is whatever causes movement, not being itself moved, such as that which is completely unchangeable, the primary reality, and essence of a thing, i.e. the form; for this is the end or that for the sake of which." (Phys 198a37-b4)

As the non-natural cause (the form and the end) has no principle of motion in itself, the natural cause will thus have it. This natural cause seems to be the efficient cause, which must be a hylomorphic compound in order to have a principle of motion in itself. The form, which coincides with the end, is such a motive principle in the compound, as part of it. Aristotle holds that final causes and forms cause motion in a sense, and they can thus be called 'sources of motion' (as the efficient cause is) in a sense as well. It seems to me, however, that Aristotle means compound substances and moved movers when he speaks of efficient causes (cf. also Phys 201a22-28), at least with respect to efficient causes on the sublunary level.[18]

When change occurs the hylomorphic agent 'transmits' a form to the patient (cf. Phys 202a3-11). For instance, the physician has knowledge of what constitutes a healthy organism. He has in this sense the (non-substantial) form of health, as Aristotle puts it, in his soul. The actions by which the physician treats the patient are 'informed' by that

[18] Note that I do not take my interpretation that efficient causes are compound substances to be uncontroversial. And some passages in Aristotle may seem *prima facie* to be at odds with it. For instance, in Phys 192b20-27 Aristotle characterises the nature of a substance as an innate principle of motion and rest of that substance as such. It may seem here as if natures are characterised as efficient causes, which are characterised as primary sources of motion and rest. Given that the natures of natural substances are identified in Aristotle with the essences of those substances, this would mean on my interpretation that the essences of natural substances are compound substances, which is clearly false. But note also that the passage in Phys 198a37-b4 allows me to distinguish two different kinds of motive causes, or principles of motion and rest. And this makes my interpretation in principle possible. For in one sense Aristotle may mean by a motive principle a movable natural principle of motion and rest, a compound substance, and speak of it as an efficient cause or as a primary source of motion and rest (e.g. Phys 194b30-2). In another sense he may mean by a motive principle an immovable non-natural and innate principle of motion and rest, and speak also of natures, forms and ends here.

knowledge of that form. They are not random actions, but are directed at bringing about health in the patient. They are thereby 'for the sake of' health, and the final cause seems to consist in this being informed of the actions. The 'form' immediately transmitted by the physician may only be warmth - the physician has the potential to produce warmth by rubbing a body that has the potential to be warmed by rubbing. The transmission takes the form of the single actualisation of an active potentiality to warm and a passive potentiality to be warmed. The action of rubbing to warm is deliberately chosen to initiate a healing process, it is an 'informed' action. For this reason the effect (the healing) follows not accidentally from the physician's actions. It is in this sense that the form of health can be said to be transmitted from the physician's soul (i.e. his medical knowledge) to the patient's body. And it is in this sense that Aristotle seems to hold that health comes from health, and house (realised in bricks and timber) from house (as form in the soul of the builder) (*Met* 1032b11-13), or heat in a body from heat of a fire etc. Note the dominant role of the form in this theory of change. The form in the agent informs the activities of the agent which bring about the qualitatively same form, or the same form in species as Aristotle would say, as the form in the agent. It is in this sense that the form in the agent is transmitted to, or reproduced in, the patient, and they thus have qualitatively the same form. Note further that the final cause and end seems not to be the actual outcome of a change; the end of a change is only in one sense the actual outcome, say, a house. But it is in another sense something about the actual activities of the agent. It is the definite tendency of these activities, that they are informed activities of a certain kind that is determinative of the expected outcome of the change in a suitable matter, if nothing impedes it. The final cause seems to be an end in the sense of a definite tendency towards a certain realized end, and not the realized end, the produced form.

The point of Aristotle's examples of art seems intended essentially to clarify how Aristotle conceives the genesis, and the being, of biological organisms. Aristotle repeatedly stresses that man begets man (e.g. *Met* 1032a22-25, 1034a35-b4, *Phys* 193b12, 194b13f) and he seems to have in mind here a process of genesis analogous to the one in art. Aristotle calls the form of a compound natural substance a 'nature'. His view seems to be that the nature of the parent organism is also 'transmitted' via natural, informed 'actions'. In the case of animals such as man this transference will be effected

through the production of a sperm and the menstrual fluid (as Aristotle seems to conceive this process) and sexual intercourse. The sperm is informed by the very kind of form of the parent, e.g. the human nature. The sperm then acts on a suitable matter, the menstrual fluid. It thereby realises its own potentiality to organise the menstrual fluid in a certain way and thereby also the passive potentiality of the menstrual fluid to be so organised is realised. The effected organisation or form is, as a rule, the same in kind as the form of the parent, i.e. they are one in species form (cf. *Met* 1034a33-b5, 1044a33-b3, *PA* 641a8-17, also: Gotthelf 2012, pp.14-16 for more details on how semen transmits a form). Just as house (in matter) comes from house (in the soul) so does nature (in the offspring) come from nature (in the parent). However, there are noteworthy differences. In particular, a house-builder, as such, builds in order to realise the form of a house in some suitable matter. A house-builder also builds, however, because he wants, for example, to earn money, which accidentally motivates him to build a house. Biological reproduction seems not to have such ulterior ends. A nature is a form that is as such a motive cause that informs an activity (e.g. the productions of sperms) without an additional 'motivation', such as we have it with earning money in the case of architectonic knowledge of the builder. This contrast points to two aspects in which natures are motive causes, namely their definiteness and their innate tendency or impulse to move the compound towards an end.

Aristotle provides with his theory of causation based on the four causes an account of how forms – not transcendent Platonic Forms but immanent sensible forms inhering in some material substrate – can be the principal causes not only of being but also of becoming. Aristotle identifies the substances in the sense of essences of concrete particulars with their forms. He explains in this way how substances qua essences are ontological causes and principles:

> "And it is clear from what has been said that in a sense everything is produced from another individual which shares its name (natural products are so produced), or a part of itself which shares its name (e.g. the house produced by reason is produced from a house; for the art of building is the form of the house), or something which contains a part of it, - if we exclude things produced by accident. For what directly and of itself causes the production is part of the product. The heat in the movement causes heat in the body, and this is either health, or a

part of health, or is followed by a part of health or by health itself. And so it is said to cause health, because it produces that on which health follows.
Therefore substance is the starting point of all production, as of deduction. It is from the 'what' that deductions start; and from it also we now find processes of production to start." (*Met* 1034a22-30)

I will now turn to forms as principles of being and to 'natures', the forms of natural substances.

§I.3.2.3. Aristotelian forms as natures and souls

"All the things mentioned [i.e. animals, plants and their respective parts and simple bodies] differ from things which are *not* constituted by nature [i.e. artefacts]. For each of them has within itself a principle of motion and of stationariness (in respect of place, or of growth and decrease, or by way of alteration). On the other hand, a bed and a coat and anything else of that sort, *qua* receiving these designations – i.e. insofar as they are products of art - have no innate impulse to change. But insofar as they happen to be composed of stone or of earth or of a mixture of the two, they *do* have such an impulse, and just to that extent – which seems to indicate that nature is a principle or cause of being moved and of being at rest in that to which it belongs primarily, in virtue of itself and not accidentally." (*Phys* 192b12-23)

"Nature then is what has been stated. Things have a nature which have a principle of this kind. Each of them is a substance; for it is a subject, and nature is always in a subject." (*Phys* 192b33f).

Central to Aristotle's Pre-Newtonian approach to explaining natural change is the idea that natural substances such as animals, plants and natural bodies (elements and their combinations) have an innate impulse, a potentiality, to behave in a certain way. Natures are so to say the basic physical profiles of natural entities. Stones do not fall downwards in Aristotle's view because they are within the gravitational field of the earth, but because stones have the natural tendency to move towards the ground, just as fire naturally moves upwards. Artefacts have a nature not insofar as they are artefacts but only in virtue of being constituted of certain natural substances. A wooden table, for instance, has the natural (physical) dispositions of wood. Natures are always in a subject, which are substances, and not accidentally so but in virtue of the subject as

such. The subject here seems to be a hylomorphic compound, at least in the paradigmatic case of biological organisms. A cow, for instance, has as such a nature as a part of it. That cow is thus as such not featureless, but has certain causally basic features that characterise it with respect to its nature (cf. also Waterlow 1988, pp. 22-26).

The question Aristotle raises in *Physics* II.1 is whether the nature of a hylomorphic compound should be associated with the form or with the matter. Natural philosophers, materialists of some sort, identify natures with matter, either with the immediate, specific matter or with the ultimate matter (earth, fire, atoms). The nature of compound wholes of some sort is alternatively associated by others with the shape or form as it is specified in the definition of the entity, as Aristotle clarifies. Flesh, for instance, has its basic and defining innate impulses to change and rest not due to its proximate material constituents on this view but due to the organisation, e.g. a combination according to a certain ratio of the elements. Aristotle holds a middle position. He holds that the natures and other potentials inherent in the material constituents contribute in a sense to the nature of the compound substance, but he clarifies that form is nature *rather than* matter (*Phys* 193a10-b12). When I speak simply of nature in the following I mean the formal nature or nature as form. The material nature (which is associated with matter) seems integrated or employed in a sense by the formal nature in Aristotle's view. Nature is characterised as a final cause, as a potential for some end (cf. *Phys* 198b10f, *Met* 1049b5-10). Matter is involved in that potential of the form as a necessary prerequisite. A clarifying example from art offered in *Phys* (199b33-200a14) states that a saw is defined by its capacity to be used for sawing, this is the end and the form. This capacity of the saw presupposes, however, that the saw is made of some suitable matter, such as iron. So the matter and its potentials are necessary ingredients for the nature of the form, which is the nature of the whole complex substance. This holds according to Aristotle in particular for biological substances, whose formal natures he calls souls.[19] The body and the body parts of an organism are conceived as instruments that serve to realise the formal nature, which is a potential for some end(s). To do this the body and its parts must consist of suitable

[19] In *PA* (641a18f) Aristotle more cautiously says that the form of living beings is the soul or part of it or something that without the soul cannot exist. In *Met* (1035b14-19, 1043a34-36) he is not so cautious and identifies the soul with the form and actuality of a body.

material constituents organised in the required way to fulfil its functions (cf. e.g. PA 642a7-13). If the end towards which the soul is directed involves for example procreation, then reproductive organs made of suitable material will be required. If the end involves running, then legs with bones, sinews and muscles will be required. Matter constitutes a compound substance only because it is potentially of a certain form in respect of which the matter – considered apart from that form and without arrangement – plays a subservient role (cf. e.g. *PA* 641a25-33). With his preference of the formal nature over the material nature Aristotle is opposed to physical reductionism, which seeks to explain all physical dispositions also of biological organisms by appeal to the causal powers or natures of the elements that form the material substrate (cf. e.g. Gotthelf 2012, pp. 11f, Waterlow 1988, pp. 69-71). In Aristotle's view the natural change of compound substances is to be explained primarily in a teleological way, in reference to ends. Just as spiders make webs for catching flies, so do plants grow leaves to provide shade for their fruits (Phys 199a21-33). The innate tendency of an organism to behave in a certain way is in each case ultimately its soul.

A soul is a form and actuality of a body (the suitable proximate matter), and that actuality of a body is a potentiality and nature to some end. This potentiality involves (depending on the biological organism) fundamental life functions such as growth, reproduction, locomotion, digestion or perception. All living beings have a nutritive capacity; animals have, in addition, a perceptual capacity and human beings have, in further addition, a thinking capacity. These or some of these (depending on the species) are the parts of souls (cf. e.g. *PA* 645b15-646a6, *De Anima* II.1, 413b9-15, Corcilius/Gregoric 2010, pp. 108-110). Forms and (formal) natures, and in particular souls, are causal principles in Aristotle, but also in particular principles of being and unity, as I will expound next.

§I.3.2.4. Aristotelian forms as principles of unity and being

> "What explains why something is coming about (and why it has come about, and why it will be) is the same as what explains why it is the case: it is the middle term [in a demonstration] which is explanatory. But if something is the case, the explanatory item is the case; if it is

> coming about, it is coming about; if it has come about, it has come about. And if it will be, it will be.
>
> E.g. why has an eclipse come about? – Because the earth has come to be in the middle. […] What is ice? – Assume that it is solidified water. Water C, solidified A; the explanatory middle term is B, complete absence of heat. Thus B holds of C; and being solidified A, holds of B. Ice is coming about if B is coming about; it has come about if it has come about; and it will be if it will be." (*APo* 95a10-21)

One point in this passage seems to be that a cause of becoming or of genesis is *ipso facto* a cause of being. The cause of becoming is the reason why some form or actuality was brought into some suitable matter or potentiality. The examples given here are such that the cause of change persists, and as long as it persists the effect also persists. An eclipse, for instance, is brought about by the moving of the earth between the sun and the moon. As long as the earth remains in the middle, so long will the eclipse last. The principal thought, with some difference, applies to natural and artificial wholes. If the craftsman builds the house, then he is the cause of its becoming and its being. Since the form of the house in the craftsman's soul informs his building activities, that form is, in this sense, a cause of the being of a house. The form of the house is here the specific end (i.e. to provide shelter) that determines what an adequate shape is, rather than the shape itself. What is different in the case of artefacts from the previous examples is that the product continues to exist even when the efficient cause (the craftsman) has stopped building. It is this case that is analogous with biological organisms. The parent and ultimately the nature or soul of the parent (owing to its tendency to procreate) is the cause that brings the offspring into being. The soul is thereby also the cause of the being or existence of the offspring. Here the analogy between artefacts and biological organisms stops. An artefact persists after its production, it seems, mainly because it is constructed in a way and with materials that make it last. The material nature (of stone, wood etc.) seems to be employed such that the artefact lasts. An artefact does not persist on its own because it is an artefact, but exclusively because of its matter, i.e. it is made of certain materials that tend to remain by nature in a certain state.

Biological organisms persist, if they persist, not just due to their material nature, but due to their formal nature, their soul. Aristotle is quite clear that the formal cause and the final cause can coincide, and he seems primarily to have the case of biological

organisms in mind (e.g. *Phys* 198a25f, 198b22-33). The question is, what exactly this means. Above I have distinguished two senses of form. I put it such that the form in one sense is e.g. the actual shape (or organisation) of a house and the form in the other sense is the end of a house (to provide shelter) that determines and constrains the possible form in the sense of shape. In the case of a house the end is external to the house, in the sense that the end is the intended use that human beings make of houses and the reason why they build houses. Biological organisms are produced by nature from some parent(s). But they have no external end in the way artefacts have them. The soul is a capacity for certain ends, such as perception or procreation. But it is also basically a capacity for self-preservation (nutrition, breathing etc.). So there is a sense in which a soul is a tendency innate in some body towards maintaining itself. In this case there seems to be no form as shape as opposed to a form as end. Rather, there is one single form and final cause that is essentially also self-related. We can still distinguish conceptually between the soul that is an informed capacity towards a certain end and the soul that is that realised end. This makes particular sense when we speak of the soul of a child that is such that it develops the body towards a mature state where the soul has its full capacities. But these are not two souls, but one self-related soul. A soul is an in itself motive cause for its continuous connection with the body. This peculiarity of souls to be self-related ends could well be the reason why only biological organisms are unities and substances in the strictest sense in Aristotle's view. Artefacts do not qualify here, because they have as such no defining nature and their being and unity depends on a final cause external to them (cf. Phys 192b12-23, 33f, *Met* 1043b21-3). Elements are rather aggregates than genuine unities or wholes (cf. 1040b5-9). Only biological organisms are unities and substances in the highest degree (ignoring god here). The reason seems to lie with the peculiar principle of unity of organisms, the soul.[20]

[20] Cf. also Fluck (2015, pp. 287-292) for an interpretation of individuals and substances that focuses on the self-relatedness of forms of biological organisms.

§I.3.2.5. Aristotelian forms as particulars and subjects of knowledge

It is controversial in the literature whether substance in the sense of substantial form is universal or particular. I agree here with Patzig and Frede (1988, I. pp. 48-57) that Aristotle conceives forms as particulars, they are '*tode ti*', a 'this something'. Particularity in the sense of being a '*tode ti*' is not, it seems, about individuation, i.e. about stating what distinguishes an entity in contrast to all other particulars. It is rather about being some most definite and fundamental thing in contrast to universals, which, I suspect, means in the case of forms that they are active motive principles. I cannot properly address opposing views here or argue for my own. The principal reason why I think that Aristotle conceives substantial forms as particulars is that they are conceived as motive causes. And a motive cause, it seems, is always a particular cause for a particular effect. In addition, Aristotle is clear that primary substances, and thus essence and forms, are peculiar to the entities whose substances they are. In other words, nothing universal will be a (primary) substance in the sense of a cause[21] (*Met* 1038b7-14, 1041a9-11, 26-32, 1071a17-24). Note that forms and natures of aggregates of elements will also be particulars or '*tode ti*', for they are causes and thereby fundamental entities of a sort, but in a lesser degree or a different sense than biological organisms. For in their case there is no innate principle that constitutes the kind of unity an organism has.

If substances in the sense of substantial forms are particulars, however, the question arises how we can have knowledge about them. For, knowledge or scientific understanding, Aristotle holds, is about universals (*APo* 88b30-89a4, *Met* 1039a14-22, 1039b20-40a7). This was part of his aporia about the nature of substance as being particular or universal. If the forms of Callias and of Socrates are not 'universal' in some sense, then knowledge about human beings in general could not be derived from studying these particulars and neither could such 'universal' knowledge be applied to them. Further, causal relations seem to hold most exactly on the universal level according to Aristotle. It is Michelangelo qua sculptor that is the cause of *David* qua

[21] Note that the 'secondary substances' in the *Categories* are universals. They are, as I see it, called 'substances' not because they are causes, but derivatively because they characterise and clarify what primary substances, which are causes, are.

statue. It is a certain compound isosceles qua triangle that has an internal angle sum of 180° (cf. *Phys* 195a32-5, *APo* 86a15-30). I can, again, not argue properly for my view here, nor more particularly against a nominalist interpretation of Aristotle. But as I see it, Aristotle tries to solve the problem of how we can have knowledge of forms by advocating a certain conception of universals, namely the conception he presents in the *Categories*. Universals, i.e. species forms, genus forms and differentiae, are conceived there as ontologically grounded in individuals, but they are epistemologically prior to the individuals, for they clarify what the individuals are as such. It is thus possible, and I think correct, to say that individual substances in Aristotle are causally active. What, however, the individual substances (or non-substance individuals for that matter) are and what the exact causal relations they are involved in are, is clarified in terms of universals, which are not causes but characterise causes as such. A definition, i.e. a real, taxonomical definition, as I understand it, does not consist of words but of universals referred to by words. It applies to any particular of which it is truthfully predicable synonymously. A taxonomical definition conveys knowledge of a species form, a universal, but it also conveys knowledge in a sense of the particular members of that species. Aristotle distinguishes here between potential and actual knowledge. Knowledge of universal relations is characterised as potential in the sense that it can be applied to actual particular cases. It is due to this potential application, it seems, that knowledge of universals is about reality and knowledge at all. Actual knowledge seems to comprise the cases where universal principles are actually applied to particular cases (*APo* 86a15-30, *Met* 1087a10-25).

I will next address Aristotle's conception of explanatory definition and demonstrative understanding, which is ultimately based on essences.

§I.3.3. Explanatory & taxonomical definitions and demonstrative understanding

§I.3.3.1. What and why - explanatory definitions

The question what something is seems in Aristotle's understanding directed at the substance (dyadic use) of an entity. In the abstract mode of inquiry Aristotle held that

stating the genus and the differentia is an adequate answer to the question what something is. To be a substance is associated here with being an ultimate subject of predication in the sense of inherence. Primary substances are further ultimate subjects also of synonymous predication (*Cat* 2a10-15, 3a6-10). In the (meta)physical mode of inquiry particular sensible substances are conceived as compounds of form and matter. To be a substance here is associated with being a cause. *Metaphysics Z* starts with the question what *the* substance of sensible substances is and Aristotle then discusses as possible candidates matter, form and the compound itself, and further universals, which are dismissed, and essences which are associated with forms. It turns out that form is the primary substance of sensible compound substances, though the compound and matter are also substances in a sense. Matter is the substrate of forms and underlies ultimately all change. It is further part of the nature of the compound, i.e. it determines to some extent the causal profile of that compound so to say. A comprehensive definition of sensible compound substances would thus have to involve not just their forms but also their matter. Aristotle argues correspondingly that the materialist and the dialectician both do not define a compound substance or any concrete entity completely. The latter gives an account only of the formal cause, the former only of the matter. The materialist defines for instance what a house is by reference to the matter that is a house only potentially. A house is, say, bricks and timber on that account. The dialectician will define what a house is by reference to the form that is the actuality of a house. A house is a shelter for human beings on that account. The materialist defines what anger is as the boiling of blood, the dialectician as something like the appetite of returning pain for pain. In Aristotle's view both kinds of definition are incomplete and should be taken together to get a complete definition of compound objects (cf. e.g. *De Anima* 403a26-b18, *Met* 1043a14-19). Aristotle does this in a particular way. He conceives the very question of what some compound entity is as aiming at the reason why the compound is one, i.e. at the cause of being and unity. The question, what a compound substance is, gets reconceived as the question, why a certain matter constitutes a single compound substance. The question, what a natural phenomenon is, gets reconceived as the question, why some non-substantial form inheres in a substance. What is sought in each case is the unifying cause:

> "In all these cases [of natural phenomena and of compound wholes] it is clear that what it is and why it is are the same. What is an eclipse? Privation of light from the moon by the screening of the earth. Why is there an eclipse? or Why is the moon eclipsed? Because the light leaves it when the earth screens it." […] So, as we say, to know what something is is the same as to know why it is – either why it is *simpliciter* and not one of the items that hold of it, or why it is one of the items that hold of it (e.g. that it has two right angles or that it is greater or less)." (*APo* 90a15-19, 90a32-34)

> "The 'why' is always sought in this form – 'why does one thing attach to another?'. […] E.g. why does it thunder? – why is sound produced in the clouds? Thus the inquiry is about the predication of one thing of another. And why are certain things, i.e. stones and bricks, a house? Plainly we are seeking the cause. And this is the essence (to speak abstractly), which in some cases is that for the sake of which, e.g. perhaps in the case of a house or a bed, and in some cases it is the first mover; for this is also a cause. But while the efficient cause is sought in the case of genesis and destruction, the final cause is sought in the case of being also." (*Met* 1041a10-33)

In principle, it seems, all four causes can figure in an account of what something is (*APo* 94a20-3). And it is always the proximate cause that is sought. The proximate matter of animals is flesh and bones, not earth and fire. The proximate efficient cause of the coming into being of an offspring is the sperm or the parent and not Adam and Eve. Which causes are involved in a definition depends on the kind of entity under investigation. Mathematical entities, which are abstracted from motion in thought, will be defined in reference to their form and maybe to intelligible matter but not to any moving cause (*APo* 94a20-24, Phys 198a14-21). The essence is conceived as the unifying cause, the cause of unity and being. In the case of sensible, concrete entities the essence is a motive cause, a nature. In the case of natural phenomena it is an external efficient cause. The lunar eclipse is defined, for instance, as a deprivation of light (a non-substantial privative form) of the moon (the proximate substrate, a substance) due to the screening of the earth (the efficient cause and essence which makes it that the form is in the matter or subject). In the case of artefacts the end will be the essence. A house, for instance, is bricks and stones (the suitable, proximate matter) built in a certain way in order to shelter human beings (the end and essence, the reason why these materials constitute a single thing). Biological organisms seem in principle defined analogously as artefacts with the nature or soul as the essence. The soul is the unifying

cause that makes it that the bones and flesh and other materials constitute a single entity (*Met* 1035b14-9, 1041b25-33).[22] A definition that states the cause that unifies the matter of a compound is explanatory in this sense, and this is why I refer to this kind of definition as explanatory. Only one part of this explanatory definition refers to the essence of the entity (what Charles (2010) calls the 'basic essence'). The other parts refer to the matter and in the case of natural phenomena also to a non-substantial form. It is in this way that Aristotle explains in what sense essences, what something is, are substances and ontological causes: by intimately associating the question of what something is with the question of why something is one thing or of why some attribute attaches to some subject.

§I.3.3.2. The taxonomical definition and the explanatory definition

There remains the question of how the explanatory definition is related to the taxonomical definition introduced in the *Topics*. Charles (2010, pp. 319-22) argues that Aristotle does not explicitly explain this relation. He suggests that either Aristotle discarded taxonomical definitions in favour of explanatory definitions, or he regarded the latter as a new basis for taxonomical definitions. I agree in a sense with the last suggestion, though I do not think that Aristotle changed his view about taxonomical definitions from the way he conceives them in the *Topics* or, implicitly, in the *Categories*. I think that taxonomical definitions apply primarily to souls as being their own causes of unity. The compound animal, for instance, is as such definable by an explanatory definition only (where its matter and form are taken universally). The unifying cause that figures in this explanatory definition, the animal soul, will be a central part of that definition. But a soul as such has no further unifying cause but itself. The only way to define what is a unity as such is, it seems, by a taxonomical definition. In *APo* II.10 Aristotle distinguishes four kinds of definition. One is the explanatory definition, which can be reformulated into a demonstration with the unifying cause as

[22] Aristotle does not provide a concrete example of an explanatory definition of a biological organism in the Posterior Analytics, in Met Z and H or in the Physics. Charles (2000, 2010) tries to spell out in more detail how such definition of biological organisms should be understood.

middle term. The other kind of definition, of interest for my purposes here, is characterised as an indemonstrable account of what something is. In *APo* II.9 Aristotle distinguishes between things that have something else as cause or explanation [αἴτιον], i.e. as cause of their being, and things which have nothing else (but themselves) as cause. In the latter case one has to make clear in some way other than by demonstration, that the thing exists and what it is. What these latter kinds of things are is controversial (cf. Deslauriers 1990, pp. 7-14), and I can again not argue adequately here for my view. I agree with Deslauriers that these self-explanatory things are not demonstrable, and not that they are unanalysable as Barnes holds. And I agree with her, that self-explanatory things are not substances, as opposed to properties and events (as Ross holds). This is because it is not the compound substance that is indemonstrable, but only the form, I think. I disagree with Deslauriers in that not only events (natural phenomena) have explanatory definitions. Also compound substances taken universally are so defined (here I agree with Charles). The examples for self-explanatory things include man or god or triangle but also night and unit according to Deslauriers (1990, p.7, 10-12). I take it these examples never refer to any compounds but only to (non-substantial or substantial) forms. Aristotle is quite clear that a compound substance is not identical with its essence (*Met* 1037a5-9, a21-b7), so also a compound substance has a unifying cause (its nature) that is different from itself. In *Met* 1025b3-17 Aristotle states that in science there is no demonstration of the substance or the 'what', which seems to refer to the essence, not the compound. So, souls, and in general natures (but also individual non-substance such as certain colours or magnitudes, e.g. 'unit') as such have no unifying cause. They seem to be defined by accounts that cannot be transformed into demonstrations, and these are taxonomical definitions. Causal considerations will be required, though, to find the adequate taxonomic definition. This is so, because one must distinguish between what is a proprium to a species or a genus and what is causally basic and essential. And it is by explanatory definitions that the essences of things are investigated and revealed in the first place, namely in their role as unifying causes.

§I.3.3.3. Demonstrative understanding

I have already said several things about how essences and forms are connected to knowledge - as potential universal knowledge and as actual knowledge when applied to individuals. Related to this, I want to clarify here what demonstrative understanding is in Aristotle.

> "We think that we understand [*epistasthai*] something *simpliciter* (and not in the sophistic way, incidentally) when we think we know of the explanation because of which the object holds that it is its explanation [*aitiai*], and also that it is not possible for it to be otherwise. […] Hence if there is understanding *simpliciter* of something, it is impossible for it to be otherwise." (*APo* 71b10-17)

> "Whether there is another type of understanding we shall say later: here we assert that we do know things through demonstration. By demonstration I mean a scientific deduction; and by scientific [*epistemonikon*] I mean a deduction by possession of which we understand something.
>
> If to understand is what we have posited it to be, then demonstrative understanding in particular must proceed from items which are true and primitive and immediate and more familiar than and prior to and explanatory [*aitiôn*] of the conclusion (In this way the principles will also be appropriate to what is being proved.) There can be deduction even if these conditions are not met, but there cannot be a demonstration – for it will not bring about understanding." (71a17-26)

Demonstration is the basis for Aristotle's theory of demonstrative science and for demonstrative understanding, which means understanding by means of a demonstration. Demonstrations are syllogisms or deductions that start from true and first principles, where a first principle seems to be a proximate cause (such as the proximate substrate for propria). Demonstrations are explanatory in the sense that the middle term, which connects the 'extreme' terms figuring in the conclusion logically, also connects these terms causally. For instance (cf. *APo* 78b4-13):

Waxing holds of all spherical things (i.e. circling things 'in the heavens').
Being a spherical thing holds of the moon.
Waxing holds of the moon.

Here the middle term (being a spherical thing) is not just the epistemic reason in virtue of which we know that the conclusion holds. It is also the cause in virtue of which the conclusion holds. This is in Aristotle's view how a demonstration conveys understanding, i.e. by showing how the cause or the explanation works as middle term in a deduction. If the middle term is not explanatory, then the deduction is not a demonstration, e.g.:

Being spherical holds of waxing things.
Waxing holds of the moon.
Being spherical holds of the moon.

This is a syllogism, but not an explanatory one. It is not a demonstration that clarifies the ontological cause why the conclusion holds. For, the moon is not spherical because it waxes, but it waxes because it is spherical. Essences, as such, are causes that can figure in demonstrations. Grasping an essence means to grasp it as the middle term of a demonstration, i.e. as a cause. Knowledge of essences, of forms and primarily of natures, is most certain; we think that we know the cause and that the cause cannot be otherwise. And knowledge of essence is most precise on the universal level. Essentialism so understood is about grasping the order of nature, about natural science.

THE DECLINE OF ARISTOTLE'S NATURAL PHILOSOPHY & THE RISE OF MODERN NATURAL SCIENCE

Aristotle developed his doctrines about essences and natural philosophy some 2350 years ago. These doctrines have been highly influential in Western natural philosophy, in particular in Medieval Scholastic times, before being 'replaced' continuously by the rise of modern sciences in early modern times. It is not part of my thesis to address the reception history of Aristotelian essentialism or to investigate the change of new world views that replaced it. I want nevertheless to point out some notable changes in the dominant world view of natural science that replaced central Aristotelian ideas. My motivation for doing that is that both Kripke and Fine develop their essentialist views against the background of modern natural science and apply their views on examples taken from there. Their forms of essentialism seem, however, not as intimately connected with natural science as Aristotle's essentialism is with his natural philosophy.

Aristotle's natural philosophy is based on the doctrine of the four causes and in particular on the concepts of substantial forms and of natures. A substantial form is a nature and as such an innate natural capacity to behave in a certain way specific to each kind of substance. Apart from discussions of the prime mover and other topics of physical interest, Aristotle's focus of investigation is with respect to the specific nature of a substance, what it is that makes, for instance, something an oak rather than a birch. In early modern times the general conception of scientific explanation changes considerably. For one, the focus of what is to be explained changes. While in Aristotle's works explanation was about the nature and substantial form of a natural substance, it becomes now about determining the fundamental material constituents of 'material bodies', such as the elements or atoms. It is the organisation and motion of these material constituents for which an explanation is sought in mechanistic terms. Substantial forms as innate motive and final causes are replaced in their explanatory role by efficient causes: laws of nature in particular. Laws of nature are subsequently also conceived neutrally just in terms of lawlike regularities. And the observable features of a body are explained as the effects of the motion and organisation of the constituent atoms of that body (Joy 2016 pp. 70-2, 77f, 81, 91f). Very roughly speaking, modern sciences make a materialist turn in contrast to Aristotelian physics. They see the

material constituents rather than substantial forms as the proper object of investigation to explain natural motion. In particular teleological explanations in terms of substantial forms are abandoned in favour of purely mechanistic explanation. The paradigm subject of investigation in Aristotle is a biological organism that should be investigated in its natural surroundings. The investigation of the material constituents and their causal effects, in contrast, also includes experiments, i.e. the artificial reproduction of the same situation, including situations that may not occur under normal circumstances. While the focus in Aristotle is also in part on what are the most specific causes of some kind of substance, it is now about what are the most general causes that hold universally of all kind of material bodies (Joy 2016, pp. 99, 101-3). Kripke and Fine develop their essentialist views against the background of modern natural science. It is this background that co-determines their conceptual resources and that provides them with examples for applying their views.

CHAPTER II

KRIPKE'S ESSENTIALISM

§II.1. Introduction

Kripke's essentialism arises in the context of quantified modal logic (QML). Essentialism is identified here with *de re* necessity, in contrast to *de dicto* necessity. It is about the mode in which a feature is possessed by its object, namely necessarily or essentially as opposed to contingently or accidentally, and independently of the way the object is described.[23] As before, I will refer to this account of essentialism as 'modal essentialism'. *De dicto* necessity is, at least in one sense, about the way in which the truth value of a proposition holds namely necessarily or contingently. The rise of QML and modal essentialism takes place within the tradition of analytic philosophy. In this tradition formalised symbolic logics or logical calculi are conceived as means to capture the fundamental, logical structure of reality. They should provide maximal clarity and precision of expression and permit 'calculating' the truth of propositions by means of truth functional, inferential relations between propositions with rigor and precision.

Kripke's essentialism seems mainly motivated by his engagement with what I will call here the 'modality question'. This is basically the question of what the place and the source of modality are. The modality in question here is 'metaphysical modality', as Kripke calls it, which is about how things could be in contrast to epistemological modality. The modality question arises naturally in the context of QML through its concern with the truth conditions of modal propositions. Kripke's essentialism seeks to provide an answer to it. It is a form of modal realism in the sense that modality is mind independent and something real about the objects in the world.[24] The modality question is the underlying subject of a vehement debate between

[23] Note that the acceptance of *de re* modality does not entail the acceptance of non-trivial essentialism. One could still hold so-called extreme haecceitism (or minimal essentialism) if one assumes that particulars are so-called 'bare particulars', i.e. particulars that have no necessary properties apart from trivial ones like being self-identical.

[24] Modal realism so understood is not the same as the stronger and more specific modal realism about possibilia such as 'possible worlds' and other merely possible particulars.

essentialists such as Kripke and anti-essentialists, in particular Quine. Quine argues that non-trivial modal essentialism is meaningless, i.e. it makes no sense to attribute a necessary property to an object as such. His arguments are based on certain widespread semantic views, 'descriptivism' and 'semantic internalism' as I will expound them. One of Kripke's main concerns about essentialism seems to show, contra Quine, that non-trivial *de re* necessity is not senseless and modal essentialism is a meaningful position. His defence of modal essentialism is thus based crucially on his semantic views. Kripke rejects descriptivism and semantic internalism and argues for a so-called theory of direct reference which includes non-descriptivism[25] and semantic externalism. A central claim of this theory is that certain terms refer directly, unmediated by any associated meaning. Kripke's theory of direct reference enables him to argue for the claim that there are *a posteriori* necessary truths, contrary to Quine's view, as I will explain it. True identity statements involving only so-called rigid designators, such as in particular directly referring terms, are the paradigm cases for Kripke of *de re* necessary truths. Kripke's essentialism is in general closely related to questions of identity. Essential properties of an object O are even conceived as being equivalent to necessary identity conditions, or equivalently to necessary existence conditions, of O. Kripke argues for several substantial essentialist theses based on this conception of essential property and on the theory of direct reference. These include essentialist theses about particulars and about natural kinds and natural phenomena (e.g. heat). In the latter two sorts of cases, Kripke explicitly draws on current theories of natural sciences. His essentialist theses about natural kinds and phenomena seem intended to demonstrate the fruitful application of modal essentialism that is implicitly already part of science.

I cannot address all aspects of Kripke's essentialism as he primarily presents them in (Kripke 1971) and in *Naming and Necessity* (1981), to which I will refer as "N&N", in due detail here. I will also not address the technical side of it (e.g. details of his modal logics), but rather the philosophical dimension. I will in particular discuss Kripke's engagement with Quine's anti-essentialist arguments and thereby with the 'modality question' to clarify that to answer this question is a, or rather the central aim

[25] Other well-known anti-descriptivists are Putnam, Donnellan and Kaplan, and notably Ruth Barcan Marcus (e.g. 1971, 2003), who has developed several thoughts in her advocacy of essentialisms against Quine that Kripke also appeals to.

of Kripke's modal essentialism. I will start with explaining certain ideas within the tradition of analytic philosophy of relevance for grasping Quine's and Kripke's views on essentialism, such as descriptivism and the difference between *de dicto* and *de re* modality (§ II.2). I will then expound Quine's criticism of essentialism (§ II.3) and after that Kripke's anti-descriptivist theory of direct reference in response to Quine's criticism (§ II.4). I will finally expound Kripke's substantial essentialist theses (§ II.5).

§II.2. The Early Analytic Philosophy Tradition

I will, in the following, briefly expound what symbolic logic in general (§II.2.1) and what descriptivism and related notions are about (§II.2.2), before finally turning to briefly discuss the distinction between *de re* and *de dicto* modality (§II.2.3).

§II.2.1. Symbolic logic and QML

Quantified Modal Logic (QML) is a symbolic logic[26] in the tradition of Frege's *Concept Script* or Russell and Whitehead's *Principia Mathematica*, which undertake to present a 'formula language' of pure thought. The basic idea of such symbolic logics is to express the pure logical structure of deductive reasoning (or parts of it) by means of the very set up of the symbolism and the syntax of the formal language. It is a calculus of inferential reasoning analogous to the paradigm of the arithmetic calculus and aiming at the same rigor and perspicuity. Logical relations such as (material) implication are to be represented by symbols (cf. Lewis 1918, p. 11). In this way ambiguities and other imperfections of natural language with respect to mathematical and philosophical reasoning should be avoided. Logic is conceived as being objective and mind independent. Its principal concern is the truth of sentences or propositions and the validity of inferences. A proposition is taken to exist and to be true or false independently of anyone thinking about it. Frege distinguishes symbolic logic sharply

[26] I speak for simplicity of QML in the singular, though there are different modal logics, not just one.

from philosophy. The latter involves epistemic questions and is methodologically not symbolic. It was eyed sceptically by Frege because of the implicit psychologism in philosophy at the time, at least as Frege saw it. Psychologism means here that psychological or epistemic theories do not just state the necessary conditions for the cognition of objective facts. They also – at least as Frege pictures it – tend to relativize the objective status of the objects of cognition (such as mathematical truths) as being dependent in some substantial sense on the psychology of the cognizing subject (Frege 1988, pp. 3-11, 2014 IX-XIV). QML is a symbolic logic that is also concerned with modality. C.I. Lewis, one of the fathers of modern modal logic, makes two arguments in support of his calculus of strict implication (his non-modal precursor to modal logic) that seem to apply equally to modal logic. Modal logic would accordingly, first, agree better with our (every-day) reasoning and our ordinary valid inference than would non-modal logic. When we think that one fact implies another, we think that there is something about the two facts that explains the implication. How facts imply each other, however, seems to turn upon possibilities about the facts. This leads to the second point, that modal logic would reflect the world better insofar as there are contingent and necessary facts in the world. That this is so seems assumed by Lewis and indicated by our ordinary reasoning (cf. Lewis 1912, pp. 522-6; 1914, pp.240-7). Once it is admitted that modality is part of our reasoning and of the structure of reality the question arises where exactly modality has its place, and source, in reality. Is it located in the particular things in a sense or in the relation between predicates or the logical form of propositions? The answer to this question depends too on the theory of semantics one endorses, such as descriptivism, to which I will turn next. Before I continue, note here a pertinent difference between Aristotle and analytic philosophy. In Aristotle entities in general, not just linguistic ones, can be synonyms and be defined. In analytic philosophy usually only linguistic or symbolic entities such as terms can be synonymous and be defined.[27] I have explained Aristotle's conceptions of synonymy and real definition already. In analytic philosophy if two terms express the same meaning or sense, they are synonyms and can be substituted salva veritate. And Russell and Whitehead (1997, 11f) characterise a definition in the context of their symbolic logic as a declaration that a newly introduced sign has the same meaning as another sign. A definition in this sense

[27] One exception is Fine, who advocates the idea of real definitions (cf. chapter III).

is stipulative and wholly concerned with the symbols, not with what the symbols symbolise. Whether I speak of *linguistic* definitions and synonymy or of *real* definitions and synonymy should be clear from the context. In this chapter the linguistic sense will be the pertinent one.

§II.2.2. Descriptivism and semantic internalism

Descriptivism[28] is a semantic theory about certain referring singular and general terms, such as proper names, natural kind terms, and terms for natural phenomena. It holds that such a denoting or referring term has an associated description (or a cluster of descriptions) that is synonymous with that term and its sense or meaning. The term 'Aristotle' for instance may have the sense 'the most famous teacher of Alexander the Great' which can be substituted for 'Aristotle' salva veritate and vice versa. A proper name, on this view, is just an abbreviation or a disguised definite description. For instance, in

1) 'Aristotle was fond of dogs.'

we can substitute the corresponding sense of 'Aristotle' for that term salva veritate and get

2) 'The greatest teacher of Alexander the Great was fond of dogs.'

Descriptivism implies semantic internalism. This view states that for a competent language speaker to understand a term means for him to grasp its meaning, i.e. the associated synonymous description. And whatever satisfies that description (i.e. possesses the properties it expresses) will be the reference of the corresponding singular

[28] Kripke attributes descriptivism in some sense to Russell and Frege and their successors such as Searle. He points out, however, that his characterisation of descriptivism reflects rather a shared and at the time common understanding of the semantics of names and other terms rather than Frege's and Russell's exact views (cf. N&N p. 27 Fn 4).

term or, alternatively, fall into the extension of the corresponding general term. The idea is that just by understanding a term adequately, and being thereby in a certain psychological state, a speaker knows *a priori* (without further empirical investigation) what the reference fixing conditions of the term are (N&N 27-33, 116-23, Bird&Tobin 2016 §3.1.)[29]

Non-descriptivism, as it is usually called, rejects descriptivism and semantic internalism, and it endorses semantic externalism. Semantic externalism about general terms typically distinguishes between observable properties, for instance of a natural kind, and its internal structure. A description associated with a natural kind term expresses observable properties of an object or a kind. For instance, 'gold' may be associated with 'yellow ductile metal'. The associated appearance properties of an object or a kind are not necessarily individuative, as, for instance, the easy confusion of gold with fool's gold shows. What is individuative, according to the semantic internalist, is the internal structure that gives rise to the appearance properties. Two distinct internal structures may give raise to the same appearance properties in several different circumstances, but they will not do so in all possible circumstances. Hence, what determines the reference of a kind term is not the possession of the usually associated appearance properties but the possession of the internal structure of the kind. In the case of gold this would involve having the atomic number 79. (N&N, pp. 90-3, 116-123, 134-6, Putnam 1973, Bird&Tobin 2016 §3.3) I will expound semantic externalism further below as part of Kripke's theory of direct reference.

Note that I will by default assume non-descriptivism in the following exposition, if not stated otherwise or indicated by the context.

§II.2.3. The modality question and *de dicto* & *de re* modality

Kripke's defence of modal essentialism seems to be an immediate expression of his views about how to answer the 'modality question' as I called it, i.e. where modality has its proper place and source. This question arises naturally in the context of semantic

[29] Note that Kripke himself does not use the very terms 'semantic internalism', 'semantic externalism' and 'non-descriptivism', though he speaks about the corresponding views.

questions in QML about how modal expressions should be correctly interpreted. One way to pose the modality question is to ask whether expressions of necessity, possibility and contingency are basically about the way in which objects possess their properties, or whether they merely express relations between the general terms we use in a sentence or something about the sentence structure. Modal essentialism holds here that modality is, in some cases at least, *de re* rather than *de dicto*. The modal *de re – de dicto* distinction can be explained in slightly different but related ways. There is an 'informal characterisation' so to say, namely that modality *de re* is about the ascription of properties of things as such as being necessary, possible or contingent. Modality *de dicto* is about ascribing being necessary, possible or contingent to what is said, to a sentence or a proposition (e.g. Noonan 2013, p. 222f, Plantinga 1969, pp. 235f). This distinction is usually thought to be clarified formally in natural language by the way we speak. A *de dicto* modality would be expressed using a 'that' phrase e.g. "It is necessary that the author of *Hamlet* is rational." *De re* modality would be expressed by placing a modal adverb next to the main verb, e.g. "Elisabeth stems necessarily from her actual parents.". There is also a 'formal characterisation' – as I will call it – of the modal *de re – de dicto* distinction, namely in the context of QML. The distinction is made usually in terms of the position of the modal operators within a sentence's structure. Note that when I speak just of sentences I speak of both open and closed sentences. A closed sentence, or a statement, is a sentence with no free, unbound variables. An open sentence contains free variables. In a *de dicto* modal sentence, the modal operator ranges over the quantifiers that bind all occurring variables in the sentences. The modal operator has 'wide scope' here. It is a statement operator. It attaches to a statement to form a new statement. Note that I will address a special, exceptional case of closed sentences with individual constants in a moment. In a *de re* modal sentence the modal operator has 'narrow scope', i.e. it ranges over free variables, or over variables that are bound by quantifiers that range over the modal operator, or over individual constants in cases of simple predications. The modal operator is thought to attach here to a predicate to form a new predicate (Latinov 2016, §2.7). Note that there seem to be cases where the mere occurrence of free variables in a modal sentence is not decisive to qualify that sentence as *de re* and the modal operator as a predicate modifier. For analytic and logical truths expressed in open sentences such as '□(Fx→Fx)' seem to be *de dicto* and

not *de re*. The necessity here is not about the way an object as such has its properties, but rather about the sentence structure. Consider further the following examples:

3) ◊∃xPx (Possibly there is something that is a philosopher)

4) ∃x□Wx (There is something that is necessarily a winner)

(3) would by the formal characterisation be taken to be *de dicto* and (4) to be *de re*. There are cases that are not so clear *prima facie*, however, for instance

5) ◊Pa ('Pa' : Aristotle is a philosopher)

(5) may be interpreted as being *de dicto,* assuming the modal operator to be a statement operator, or as being *de re,* assuming the modal operator to be a predicate operator. (5) can also be spelled out in different ways in natural language, which seem however not to differ in what they express: "It is possible that Aristotle is a philosopher" and "Aristotle is possibly a philosopher". Both sentences would be formalised in symbolic logic in the same way "◊Pa". I assume here in general that (5) is *de re*, as Latinov (2016, §2.7) does. A descriptivist such as Quine would not agree. For him (5) would not represent the true underlying syntax of a natural language sentence, as I will explain it in the following sub-section. There are some further points about the modal *de re – de dicto* distinction that would deserve to be expounded in some detail or to be clarified, but which I can only mention here briefly. For one, *de re* modality need not be about first order logic objects and their properties. These objects serve as central examples for the discussion of the modality question in Quine and Kripke. But also higher order logic objects, i.e. properties or relations, can in principle have modal properties. There is further a question whether any *de dicto* modal sentence can be transformed into a *de re* modal sentence, or the other way around, or not. And there is a question about whether all cases of *de dicto* necessary truths are analytic or logical truths. That if Beulah is a cow, then it is an animal, seems to be a *de dicto* truth. But that cows are animals is not analytic according to Kripke, as will become clear. Leaving all these questions aside, I will assume in the following the characterisation of the modal *de re – de dicto* distinction as I have expounded it here.

§II.3. Quine's Criticism: Essential Predication makes no Sense

Quine is one of the most prominent and ardent opponents of QML and in particular of essentialism. And it is to a large extent with his criticism, and the views it assumes, that Kripke seems engaged in his defence of essentialism. Quine seems to be a modal anti-realist, i.e. for him modality is not a language and mind independent part of reality (cf. Noonan 2013, p.41). He also argues explicitly against the distinction between analytic and synthetic truths (Quine 1980b). That does not impede him from assuming sometimes a certain position about modality in a discussion contrary to his actual convictions; in particular that necessity is equivalent to analyticity, as the early proponents of modal logic seem to have assumed it. Quine's objection to essentialism now, as I will expound, consists for one in giving examples to show that modal operators create so-called 'referentially opaque contexts' which lead to cases of substitution failure. It consists further in an argument to show that *de re* modality and thus essentialism is ultimately senseless, i.e. it makes no sense to predicate a necessary property of an object 'as such'. In 'Three grades of modal involvement' (1979a) Quine lists three ways in which modality can be involved in logic or semantics. The first grade is permissible in Quine's view. The second can be accepted with certain precautions. The third grade should be rejected. Quine speaks only of necessity in his examples and he assumes the common position that modal logic is concerned with necessity of a logical or *a priori* sort (Quine 1979a, p. 159). In other works, e.g. (Quine 1980a, p. 143), he explains that for the modal logician a statement (i.e. a closed sentence) of the form "Necessarily p" is true just if p is analytically true.[30] On the first grade of modal involvement necessity is represented as a semantical predicate, a predicate that attaches to the name of a statement. Examples of the first grade of modal involvement are (where (6) is true and (7) false):

6) Nec '9>5'

[30] Quine speaks, by appeal to C.I. Lewis' Modal Logic, of 'strict' necessity. This seems to refer to logical or alethic modality as opposed, for instance, to physical, deontic or epistemic modality (Quine 1980a, pp. 143, 158, Ballarin 2014).

7) Nec ‘Napoleon escaped from Elba’

Necessity is expressed here in the form of the semantical predicate ‘Nec’ meaning ‘is necessary’ that attaches to the name of a statement to form a statement. That semantic predicate seems to qualify a statement not on the level of the object language, but rather in a semi-formal meta-language in which the object language is interpreted and discussed. Quine notes that the notion of necessity so conceived has a very similar purpose as the (meta-linguistic) notion of validity in proof theory. Validity, as Quine explains it, means a qualification of a sentence not just as being true but as being of a structure such that all sentences of the same structure are true (Quine 1979, pp. 158f, 165f, 168f). Statements such as (6) will be true, it seems, if the statement name involved names a statement that is either valid and logically true or *a priori* because it is an analytic or a mathematical truth. Mathematical truths are usually taken to be *a priori* and on the assumption of logicism they are analysable into logically true statements. The second grade of modal involvement consists in the employment of modal operators, on the level of the object language, attached to a statement to form a new statement. For instance (I change Quine’s examples somewhat for ease of discussion):

8) □(9>5)
9) □(Napoleon is a human being)

The third grade of modal involvement is an extension of the second grade such that the modal operators can also be attached to open sentences, for instance:

10) □(x>5)
11) ∃x□(x>5)

Quine’s distinction of three grades of modal involvement turns on the modality question, i.e. what expressions of modality in QML are intelligible and, in consequence, where modality has its proper place. To understand Quine’s position on the modality question it seems required to understand why he rejects the third grade of modal involvement as he does and further how these three grades of involvement relate to the

distinction between *de dicto* modality and *de re* modality. I will address the second question first.

On the first grade of modal involvement the semantical predicate 'Nec' qualifies a statement with respect to the mere logical structure of that statement or its being analytic. It seems therefore to express a *de dicto* case of modality. Quine associates the third grade with *de re* modality but not the second grade. The second grade seems thus to be conceived by Quine as a case of *de dicto* modality as well. Take a formalised version of (9), a case of second grade involvement:

(9') □Hn

Quine seems to take the modal operator to function as a statement operator, which suggests a *de dicto* reading. But given that there are no quantifiers involved, (9') can also be interpreted as a *de re* expression. For, we can equally well take the modal operator in (9') to qualify the predicate rather than the statement: 'Napoleon is necessarily a human being'. But even if we read (9') as 'Necessarily, Napoleon is a human being', it would seem to qualify the way in which Napoleon has its property of being a human being. And this indicates a case of *de re* necessity according to the informal characterisation. (9') would thus arguably seem to be a case of *de re* necessity rather than of *de dicto* necessity. The latter position, Quine's position, makes more sense, however, if we assume descriptivism and Russell's analysis of definite descriptions. On these assumptions 'Napoleon' is an abbreviation for and synonymous with some definite description, say 'the first French emperor'. This definite description can be further analysed, which allows us also to analyse (9') further and in different (slightly simplified)[31] ways:

(9'') $\exists x(Fx) \wedge \Box \forall y(Fy \rightarrow Hy)$

(There is some x that is French emperor and it is necessary that if any y is French emperor then y is a human being)

[31] I omit here the uniqueness condition for the sake of simplicity.

(9’’’) $\exists x(Fx \wedge \Box Hx)$ (There is some x such that x is French emperor and x is necessarily a human being.

In (9’’) the necessity operator does not qualify the relation between an individual and its properties. It rather qualifies the relation between two simple predications and ranges over the universal quantifier. (9’’) seems thus to contain a case of *de dicto* necessity. The conjunct with the material implication may be taken to express an analytic truth, if we assume that being French emperor implies being a human being. That conjunct could then arguably be analysed into a logical truth. (9’’’), in contrast, seems to express a *de re* necessity. So I take it that Quine conceives the second grade along the interpretative lines of (9’’), not of (9’’’). Otherwise he would have to conceive cases such as (9) as cases of *de re* necessity, but he does not. Quine’s general endorsement of descriptivism is further indicated in other works where Quine states that the same object can be specified in different ways (e.g. Quine 1960, pp. 197-200).

Quine rejects the idea of the third grade of modal involvement in QML and thereby also modal essentialism. Quine (1979a, p. 175f) characterises modal essentialism as the doctrine “… that some of the attributes of a thing (quite independent of the language in which the thing is referred to, if at all) may be essential to the thing, and others accidental.” For instance, a man will be essentially rational and accidentally walking according to this view, ‘not merely qua being a man but qua itself’, as Quine puts it.[32] Quine is actually speaking of Aristotelian essentialism there. This labelling is, however, not backed by any text-based interpretation of Aristotle’s works provided by Quine, nor does Aristotle, as Quine suggests, equate necessary properties with essential properties. Quine characterises essentialism such that an object’s essential and accidental properties are *independent* of any way of referring to or describing the object. I will call this requirement, following Mackie (2006, p. 3), the Description Independence Principle (‘DIP’). DIP seems for Quine to be a central criterion to

[32] Quine actually argues that just from admitting *de re* modality a stronger claim results, namely that all objects will in fact have some necessary property and some accidental property. For, everything is necessarily self-identical and everything is contingently such that it is ‘self-identical and p’, where ‘p’ is a contingent proposition (Quine 1979b, p. 179f).

distinguish *de re* modality from *de dicto* modality. And it seems to constitute a central aspect of Quine's challenge to essentialism. The essentialist must argue that certain properties are essential and others accidental of 'the neutral thing itself', as it were. For instance, he has to argue that Socrates is necessarily rational, but not just qua being a human being, but qua itself, to stick with Quine's example.

Quine's postulation of DIP seems motivated by several counterexamples to essentialism about substitution failure. A denoting term is, as a rule, taken to simply refer to its object. It is in normal contexts, as Quine puts it, a (purely) referential term. Such referential terms, singular terms in Quine's examples, can usually be substituted for co-referential terms salva veritate. Substitutivity is thus taken as a criterion of (pure) referential occurrence of terms and of being co-referential. That two terms are in general substitutable salva veritate indicates that their respective references are identical with each other, i.e. they are the same object. Quine notes, however, that certain so-called referentially opaque contexts render a purely referential occurrence of a term non-referential. And this means that a term cannot always be substituted for any co-referential terms salva veritate in such referentially opaque contexts (Quine 1979a, pp. 160f). Quine's point is that a certain use of modal operators creates such referentially opaque contexts. Consider (cf. Quine 1979a, pp. 159f, 163):

(12) $\Box(9 > 5)$

(13) 9 = the number of planets

(14) $\Box$(the number of planets > 5)

From (12) and (13) we can, by substituting 'the number of planets' for '9' in (12), infer (14), but (14) is false while (12) is true. The substitution is not salva veritate. The necessity operator, Quine holds, thus creates a referentially opaque context. The use of modal operators can lead to substitution failures. If they are to be employed nonetheless, then additional rules restricting substitution are required. Now, assuming descriptivism, consider further that if we apply existential generalisation on (12) and on (14) we get in each case

(15) $\exists x\Box(x>5)$.

(15) as such seems from Quine's standpoint neither true or false, but ambiguous and meaningless in this sense. For, it will be true only if we refer to x by the term '9', but false if we refer to x by the co-referential term 'the number of planets'. (12) seems to be necessary because it is analytic due to the sense of the term '9', which supposedly can be analysed, on the descriptivist's view, in a way to derive a logical truth from (12). (14), in contrast, is not necessary because it is not analytic due to the distinct sense of 'the number of planets'. So, the necessity of a truth derives from the fact, it seems, that the predicate P is analytic in relation to the subject term T. And the same predicate P will not be analytic in relation to all co-referential terms of T, as the example about the number 9 shows. This will only be so in the case of terms which are not only co-referential but also co-intensional and synonymous with T. Not all merely co-referential terms are always substitutable for each other salva veritate in modal contexts. And this seems to be the point of Quine's examples. Quine's approach to deal with this problem is to argue that *de re* necessity must be about an object and its properties independent of the use of any particular subject term that would allow to analyse a simple predication into an analytic sentence. In this way, no substitution of terms can lead to a change of truth value. But this just means to hold DIP. With DIP a *de re* necessary truth must be expressible without the use of a subject term that has a sense. Assuming descriptivism, all terms but variables are excluded as possible subject terms to express a *de re* modality. And this means that it is impossible to express any *de re* modal truths meaningfully. All that can be expressed is for instance (15) - and this seems to be neither true nor false. *De re* modality, and with it essentialism, appears thus to be meaningless or 'senseless', apart from trivial cases such as being necessarily self-identical. Quine can thus, it seems, conclude:

> "Essentialism is abruptly at variance with the idea, favored by Carnap, Lewis, and others, of explaining necessity by analyticity (cf. p. 143). For the appeal to analyticity can pretend to distinguish essential and accidental traits of an object only relative to how the object is specified, not absolutely. Yet the champion of quantified modal logic must settle for essentialism." (Quine 1980a, pp. 155)

Quine's anti-essentialist arguments are meant to show that even if we accept the first two grades of modal involvement (equated with *de dicto* modality), this should reasonably not lead us to accept the third grade of modal involvement (equated with *de re* modality) and thus essentialism. The only possible sources of necessity seem thus to be validity, i.e. logically true sentence structures, and analyticity. Analytic truths can arguably be analysed into logical truths, and if so then all necessity in Quine would ultimately be about logical truths. There is, anyway, on Quine's picture no source of (non-trivial) necessity in the relation between an object as such and its properties. Kripke disagrees with Quine and argues for the meaningfulness of non-trivial essentialism.

§II.4. Kripke's Modal Essentialism and his Theory of Direct Reference

> "Now, although in most publications Quine has interpreted necessity as analyticity, and predicated his remarks on this interpretation, it is clear that the problem of essentialism can be approached in a more general context, namely: what philosophical or logical differences are there among the various grades of modal involvement? What new assumptions are required for the transition from the first grade to the third?
> Surprisingly enough our answer will be *none*. Anyone who accepts the first grade must accept the third; hence in particular, anyone who accepts analyticity accepts essentialism [in the formally characterised sense of *de re* necessity] also. The latter cannot be more untenable than the former. And the founders of modal logic did not deceive themselves when they thought it could be based on analyticity alone." (Kripke 2013, p. 5f)

Kripke claims here, contra Quine (1979a), that if we accept the first grade of modal involvement, associated with *de dicto* modality, as Quine does, we have to accept the third grade of modal involvement, associated with *de re* modality and essentialism, as well. I will not elaborate on Kripke's arguments here, since they stem from a time before he developed his more mature views.[33] This passage serves mainly to show how closely Kripke's advocacy of modal essentialism is connected to his engagement with

[33] (Kripke 2015) was actually written in 1961/2 though most footnotes were added for the publication in 2015. (Quine 1979a) was first published in 1953.

Quine's anti-essentialism and the question where modality, in particular necessity, has its place and source. These points continue to be central also in Kripke's essentialist views of the 1970s, in N&N and Kripke (1971), which I will expound here. I will first introduce central essentialist and related notions in Kripke (§II.4.1) followed by an exposition of Kripke's theory of direct reference (§II.4.2). I will then explain how this semantic theory allows Kripke to meet Quine's anti-essentialist objections, and to defend modal essentialism as an in principle meaningful position (§II.4.3). I will then address the importance of *de re* modality for truth conditions and for our understanding of propositions and thus of reality in Kripke (§II.4.4).

§II.4.1. Essentialist and related notions in Kripke

Kripke (N&N p. 39) characterises essentialism as the belief in *de re* modality, i.e. objects have necessary, i.e. 'essential', and contingent properties. He rarely speaks of 'essences' and he does not really elaborate on his conception of essence as such. He rather focuses on explaining his conception of essential property, in two different but related ways.

> "Another example that one might give relates to the problem of essentialism. Here is a lectern. A question which has often been raised in philosophy is: What are its essential properties? What properties, aside from trivial ones like self-identity, are such that this object has to have them if it exists at all, are such that if an object did not have it, it would not be this object?" (Kripke 1971, pp.151f)

On the first characterisation in this passage an essential property is a property an object must have if it exists.[34] On the alternative characterisation offered, an essential property is a property an object must have if it is to be that very object. Kripke takes these characterisations to be equivalent, which is shown by the formalisations he provides in (Kripke 1971, p. 152 Fn12): '$\Box((\exists x)(x=a)\rightarrow Fa)$', the formalised first version, is

[34] This characterisation makes existence trivially an essential property, for necessarily, if an object exists, it exists. Kripke (1971 p.151 Fn 11) thus notes that an exception for existence must be made.

equivalent to '□(x)(¬Fx →x≠a)'[35], the second one. Kripke's characterisation of essential properties in these two variants and his formalisations of them show that he conceives essential properties in terms of necessary conditions, namely as necessary identity conditions or as necessary existence conditions of an object. Note that 'identity conditions' can also just mean any conditions that allow us to identify or pick out an object in a certain context. Understood in this sense I will always speak of identification conditions, not of identity conditions.[36] Corresponding to the two variant conceptions of essential properties, an accidental or contingent property can either be conceived as a property an object does not need to have to exist, or as a property that an object does not need to have in order to be that very object.[37]

Kripke clarifies his notion of an essential property when he discusses concrete objects that do not exist necessarily:

> "In addition to the principle that the *origin* of an object is essential to it, another principle suggested is that the *substance* of which it is made is essential. Several complications exist here. First, one should not confuse the type of essence involved in the question 'What properties must an object retain if it is not to cease to exist, and what properties of the object can change while the object endures?', which is a temporal question, with the question 'What (timeless) properties could the object not have failed to have, and what properties could it have lacked while still (timelessly) existing?', which concerns necessity and not time and which is our topic here. Thus the question of whether the table could have *changed* into ice is irrelevant here. The question whether the table could *originally* have been made of anything other than wood is relevant." (N&N, pp. 114f Fn 57)[38]

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[35] Kripke uses '(x)' here in the sense in which '∀x' is used, as I do also sometimes.

[36] Identification conditions need not (explicitly) involve necessary/essential properties. Being the present president of the USA is a property that can (still) serve as an identification condition of Obama in the actual world. It does not mean that Obama is necessarily the present president of the USA. Identification conditions may be sufficient to identify an object uniquely or not and thus be incomplete. (Non-trivial) essential properties serve at least as incomplete identification conditions, e.g. being essentially a cow identifies Beulah partly.

[37] In possible world paraphrase, an essential property of an object O is a property O has in every world in which it exists, whereas an accidental property of O is a property O has in some but not all possible worlds where O exists.

[38] 'Substance' is obviously not used in Kripke in the Aristotelian sense of primary substance, meaning essence, or as compound substance. But also matter is substance in a sense in Aristotle, and this

The distinction Kripke draws here is between 'temporal' properties, i.e. enduring properties that an object, if it has it, cannot fail to keep if it is to continue to exist, and 'timeless' properties which an object necessarily has from the start of its existence and throughout it. An enduring property of an object can be an essential property of that object, but being an enduring property is not sufficient for being an essential property. An essential property has to be timeless in the sense that the object that has it could not have failed to have it. An enduring property may not be timeless in this sense. And it may be the case that an essential property is in a sense not enduring. It may be essential, for instance, for an object to have been originally produced from a certain material such as wood, without it being essential for it to consist of wood at a later point in time. The object may change into ice later on, as the example goes.

Essential properties are characterised alternatively in terms of necessary existence conditions and in terms of necessary identity conditions in Kripke. The latter characterisation associates essential properties of an object with the 'identity' of that object. The notion of identity in question here is numerical identity and not just qualitative identity. Two objects can be qualitatively identical. They then share all their qualitative properties, without thereby being necessarily numerically identical, at least on certain views. Two Irn-Bru cans may arguably be qualitatively identical, though they are at the same time at different places and consist of different components. These properties are arguably non-qualitative, since they are only about other individuals, i.e. places and molecules. Numerical identity holds only between a thing and itself, and entails qualitative identity, as it is stated in Leibniz's Law of the indiscernability of identicals: $\forall x \forall y((x = y) \rightarrow (Fx \rightarrow Fy))$. There are further different notions of 'identity' relevant for numerical identity. Essential or necessary properties are associated with so-called 'trans-world identity' in Kripke (cf. N&N p. 42). The idea here is that for the reference of "a" to be numerically identical to the reference of "b" (i.e. 'a=b') 'a' has to have the same (qualitative and non-qualitative) properties as 'b' in any 'possible world' or counterfactual situation in which b exists. Diachronic identity in contrast is concerned with the properties an object must have to be identical with itself over time.

idea of matter as substance seems close to Kripke's use of substance as chemical substance or the kind of material out of which an object is made.

If Beulah came into being as a cow, then arguably no object at a later time can be identical to Beulah (in that possible world) if it fails to be a cow. Being a necessary property for diachronic identity does not imply being a necessary property for trans-world identity. If Beulah could have come into existence as a beaver, for instance, then being a cow is not relevant for its trans-world identity. The distinction between diachronic and trans-world identity corresponds to Kripke's distinction between enduring or temporal properties and timeless properties. Synchronic identity is concerned with the necessary properties for being identical to a certain object at a given time. The 'trans-world identity' of an object arguably may, but need not involve non-trivial sufficiency properties (which need not be distinct from essential properties). A sufficiency property of an object is equivalent to a sufficiency condition for the existence and the identity of that object. A property P is a sufficiency property of an object O iff any object K that instantiates P would thereby be identical to O, and O would then exist namely as K. The notion of an individual essence (IE) of an object O means a (simple or complex) property such that IE is essential to O and, necessarily, any object K that exemplifies IE is identical to O. An individual essence is both a necessary and a sufficiency property. It is necessary and unique to an object (cf. Roca-Royes 2011, p. 72).

To resume, Kripke advocates two equivalent conceptions of essential property, namely in terms of necessary existence and of necessary identity conditions. Identity here means numerical identity and it is associated with identity across possible worlds. Kripke's disagreement with Quine's anti-essentialism is, however, not about these essentialist notions as such. It is rather about a semantic dispute, to which I will turn next.

§II.4.2. Kripke's theory of direct reference

Kripke's reply to Quine's anti-essentialist criticism and its implicit descriptivism consists essentially in three claims. First, the epistemological has to be distinguished strictly from the metaphysical. Epistemological notions, such as *a priori* and *a posteriori*, should not be conflated or even taken to be equivalent with 'metaphysical'

necessity and contingency respectively (§II.4.2.1.). Second, proper names, natural kind terms and terms referring to natural phenomena are special kinds of 'rigid designators', namely 'directly referring terms'. Identity statements involving only rigid designators have the truth value they have necessarily (§II.4.2.2.). Third, Kripke holds a form of semantic externalism (§II.4.2.3.).

§II.4.2.1. The epistemic and the metaphysical

§II.4.2.1.1. Metaphysical necessity and *a priori* truths

Kripke (N&N pp. 34f; 1971, pp. 151-3) notes that it is common at the time (i.e. 1970s) not to distinguish between necessary truths and *a priori* truths. And, likewise, *a posteriori* truths are commonly conflated with contingent truths. Kripke argues that this conflation is mistaken and that the acceptance of this mistaken conflation constitutes a serious obstacle for accepting essentialism. '*A priori*' and '*a posteriori*' are epistemic notions. An *a priori* truth is, as Kripke characterises it, appealing to Kant, a truth that can be known independently of any experience. He interprets this further:

> "It might be best therefore, instead of using the phrase '*a priori* truth', to the extent one uses it at all, to stick to the question of whether a particular person or knower knows something *a priori* or believes it true on the basis of *a priori* evidence." (N&N p. 35)

Kripke's conception of what *a priori* truth is goes beyond Kant's characterisation. It is subject specific. Whether a sentence expresses an *a priori* or *a posteriori* truth may only be determined in relation to a given particular person believing the sentence to be true. It is about the evidence that leads that person to believe that sentence to be true or not. And a sentence is *a priori* true with respect to a given person just if that evidence is *a priori* for that person. A question here is of course, what exactly counts as *a priori* evidence for a given person. It seems that any evidence is *a priori* if it is not empirical in some sense, i.e. acquired by perception or learned from experience. Kripke seems to subsume here at least three distinguishable cases of *a priori* evidence. First, truths based

only on reasoning are held to be *a priori*, e.g. a mathematical truth based on one's own reasoning. Second, truths based on linguistic competence and meaning, such as analytic truths, are *a priori*. Third, truths that follow just from the way a term is originally introduced in language can be *a priori* for certain subjects. I give an example for this case, of an *a priori* contingent truth, in §II.4.3.1. A consequence of Kripke's notion of the *a priori* is that any sentence known by a subject *a priori* could also in principle be known *a posteriori* by that person or by another person. To use one of Kripke's examples: someone may find out by his own calculations that a certain number is prime and thus know *a priori*. Someone else may get to know the same mathematical truth on the basis of a computer calculation. His belief in the mathematical truth would be *a posteriori*, since it relies on his (empirical) belief in the laws of nature and the construction of the computer and on the output of the computer visible on the screen (cf. N&N, p. 34f, 55-57).

While aprioricity and aposterioricity are epistemic notions, the notions of necessity and contingency can refer to different spheres, e.g. to logical, nomological or metaphysical modality and also to epistemic modality. Epistemic modality is about what is necessary, possible and contingent for something relative to the knowledge of a given individual. Kripke's modal essentialism is about metaphysical modality, not about epistemic modality. Metaphysical modality is about how the world and the things in it must be or can be or could have been, independent of our knowledge of them.

§II.4.2.1.2. Two senses of 'definition' and of 'sense'

> "Frege should be criticised for using the term 'sense' in two senses. For he takes the sense of a designator to be its meaning; and he also takes it to be the way the reference is determined. Identifying the two, he supposes that both are given by definite descriptions. Ultimately I will reject this second supposition too; but even were it right, I reject the first." (N&N, p. 59)

Kripke argues that the conflation of metaphysically necessary truths and *a priori* truths is grounded also in a conflation of two senses of 'definition' and of 'sense'. This leads naturally to the assumption of descriptivism about proper names and other terms.

According to the descriptivist, denoting terms have a sense, a description associated with the term. That sense has a double function. It is what the name means and it is for this reason synonymous with the name. Further, it is what determines the reference of the name. For instance, assume the name 'Aristotle' has the associated sense expressed by 'the most famous teacher of Alexander the Great'. These two expressions then are synonymous and can, so the theory, be substituted for each other salva veritate. At the same time the description of being the most famous teacher of Alexander the Great also serves as complete identification condition and fixes the reference of 'Aristotle'. On the descriptivist picture, Kripke argues, it would follow that whoever is the most famous teacher of Alexander the Great in any counterfactual situation, just is Aristotle in that situation. But this is a very implausible result. For we do not think that the person we call "Aristotle" necessarily was the most famous teacher of Alexander the Great. We can think of situations where Aristotle might not have taught Alexander at all. So it seems to make no sense to hold that a name is synonymous with its associated sense in such cases. And this would mean that descriptivism about proper names is mistaken.[39] It makes sense, though, to use the associated sense here as a means to identify Aristotle in this world. We may either introduce the word "Aristotle" as a name for someone or explain to someone else who the reference of "Aristotle" is. We can do this by giving a

[39] Kripke offers different arguments against descriptivism. N. Salmon (2005 pp. 23-31) classifies these arguments as modal, epistemological and semantical arguments. Modal arguments appeal to the fact that objects could have failed to possess the properties expressed in the identifying description. The example about Aristotle's alternative life without teaching is an example. Epistemological arguments appeal to the fact that we can imagine, to take the same example, that Aristotle might never have been a teacher of Alexander's. If 'Aristotle' and 'the most famous teacher of Alexander the Great' were synonymous, then it should be analytic that Aristotle taught Alexander, however. To imagine otherwise should be as impossible or as contradictory as imagining that there are married bachelors, but it is not. Semantical arguments address our intuitions in cases of errors. Kripke (N&N pp. 83) gives the following example. Let the sense associated with 'Gödel' be 'the man who proved the incompleteness of arithmetic'. Assume now that we find out that the man who discovered the incompleteness of arithmetic was in fact a man called 'Schmidt' and not the man we called "Gödel" so far. In that case, would the man called "Schmidt" be the true reference of "Gödel", or would the man we meant to be the reference of "Gödel" before we found out the mistake still be the reference of "Gödel"? It seems the latter should be the case. But descriptivism would, counter-intuitively, demand that Schmidt would be the reference of "Gödel".

(complete) identification condition with respect to the actual world to fix the reference of the name, i.e. to stipulate or explain what object the name refers to. Let this be the reference fixing sense associated with a name (if it has one). Another sense of 'sense' means the meaning of a term, a description that is synonymous with a term and that can be substituted salva veritate for the term. These two senses of 'sense' correspond to two notions of definition, Kripke argues. A reference fixing definition means a definition where a name for an object is introduced by way of a reference fixing sense. In a definition of the meaning of a term, in contrast, a single term such as 'bachelor' is defined in terms of a complex expression such as 'unmarried man'. Here the definiens will be synonymous with the definiendum (N&N, pp.31-33, 55-57). Descriptivism does not distinguish the different senses of sense and of definition and thus leads to the implausible results just mentioned.

§II.4.2.2. Rigid designators and directly referring terms

Kripke (1971, p.140, N&N pp. 134-6) rejects descriptivism about proper names and about terms for natural kinds and natural phenomena. He argues that these terms, first, do not describe an object in the way definite descriptions do, but they simply refer to their respective objects. They are, as I will say, directly referring terms. Second, these directly referring terms are rigid designators.

Directly referring terms have no meaning in the sense of some associated definite description that is synonymous with its corresponding term and that fixes the reference of that term. Directly referring terms may have (but need not have) a reference fixing sense or description associated with them, which will then, however, not be their meaning. To take the example from above: on the descriptivist view, it would be analytic to say that Aristotle was a teacher of Alexander the Great. On Kripke's view it is not analytic, since 'Aristotle' has no synonymous meaning that can be predicated analytically of Aristotle. We can nevertheless use that description to fix the reference of "Aristotle" with respect to the actual world when we introduce the name. Further, proper names and terms for natural kinds and phenomena are so-called rigid designators. A rigid designator is a referring term that refers invariably to the same

object. It refers, in other words, to the same object in every possible world. As Kripke conceives the term, that means that a rigid designator refers to its object only in possible worlds where the object exists and it refers to nothing in possible worlds where the object does not exist (1971, p.146, N&N, p. 48f). If a directly referring rigid designator has a reference fixing sense associated with it, then this sense serves only to fix the reference with respect to the actual world, not in counterfactual situations. Once the reference is fixed, the reference of a rigid designator is the same object even in situations where the object fails to have the property expressed by the reference fixing sense. A non-rigid designator, in contrast, refers to different objects in different possible worlds (if at all). Definite descriptions may be rigid or non-rigid designators. 'The present president of the USA' is non-rigid, 'the positive square root of 4' would be rigid.

Kripke (1971, pp. 148f) holds that there is a simple intuitive test to determine whether a term is rigid or not. We can say, for instance, that the inventor of bifocals could be a different person than it in fact is, or that the number of planets could have been a different number than it actually is. Doing this we seem to know intuitively, at least in certain cases, whether or not a certain counterfactual situation is in principle possible. It seems for instance clear that there could have been someone different inventing the bifocals than who actually did it. And the number of planets could also have been different than it actually is. The corresponding terms are therefore non-rigid designators. It seems, however, that we could not say that someone else could have been Nixon, so 'Nixon' seems to be a rigid designator. In this way we know - so the thought goes - whether a term is a rigid designator or not.

§II.4.2.3. The causal chain theory of reference

Kripke's rejection of descriptivism also comprises his rejection of semantic internalism in favour of semantic externalism. To get clear about the difference between these two positions, we need to distinguish two questions. For one, how does a speaker using a term refer to the reference of the term? Second, how is the reference of a term determined? For the semantic internalist these questions have the same answer: a

competent speaker grasps the meaning of a term and that meaning, a uniquely identifying description, determines the reference of the term (a particular or an extension). So when the speaker uses the term, he refers to the reference just by his grasp of the meaning of the term. How does a speaker using a directly referring term refer to the reference according to semantic externalism? A reference fixing description associated with a directly referring term is not the meaning of that term. A speaker may refer to the reference of a directly referring term in virtue of his grasp of the reference fixing description. The term refers to the same reference also in counterfactual situations where the reference would not satisfy the reference fixing description. Kripke argues that this way of fixing the reference may apply in certain cases, but it need and arguably will not apply to other cases. People do often not associate a uniquely identifying description with a name. If someone knew of Cicero just that he was a famous Roman orator, then this information is not sufficient to uniquely identify Cicero. Also, assume all we know about Gödel is that he proved the incompleteness of arithmetic. If we now find out that in fact he did not, but some Mr. Schmidt did, we would not think that Schmidt is in fact the reference of "Gödel". But if so, then the description 'the man who proved the incompleteness of arithmetic' cannot be what actually determines the reference of "Gödel" here (N&N pp. 80-5). Kripke proposes an alternative picture of how referring occurs. On that picture a name will be introduced by some person by ostension or description. A baby will be baptised, a planet will be named etc. The name then is passed on through communication from people to people. A speaker who learned a name from someone else can use the name and refer to its reference through the actual chain of communication that connects him through other people or members of a linguistic community with the reference. The speaker need not associate any sense or description with the name, and if he does, he could be mistaken about that sense (N&N pp. 90-7). A speaker may refer to an object just via that chain of communication that connects him to the reference.

The other question was: how is the reference of a directly referring term determined according to semantic externalism? This question is relevant for terms referring to natural kinds and natural phenomena. The reference fixing sense of e.g. a kind term such as 'gold' in the actual world is typically a description of appearance properties of the kind (yellow, shiny) as opposed to the kind's internal structure or

constitution. The internal structure, or part of it, could be, for instance, a certain molecular composition or having a certain atomic number. And it is this internal structure that determines the reference of a natural kind or natural phenomenon term across possible worlds, not the reference fixing appearance properties. This aspect of semantic externalism already seems to presuppose essentialism about natural kinds and natural phenomena. For, it assumes that the internal structure is essential to the kind or the phenomenon rather than the appearance properties, which may vary across possible worlds.

Semantic externalism is the last piece of Kripke's theory of direct reference that allows Kripke, it seems, to meet Quine's anti-essentialist objections and to defend essentialism as a view that is not meaningless.

§II.4.3. Legitimising essentialism

§II.4.3.1. Necessary *a posteriori* truths & contingent and necessary identity statements

One of the orthodox views Kripke had to challenge in order to defend essentialism was that all necessary truths are only knowable *a priori*, while all contingent truths are only knowable *a posteriori*. Assuming the theory of direct reference and in particular the distinction between the metaphysical and the epistemological gives Kripke the conceptual space to challenge this orthodoxy. Kripke can argue now that there are contingent truths that are known *a priori* and, more importantly, there are (metaphysically) necessary truths, i.e. essential truths that are known *a posteriori*. Kripke further argues that identity statements that involve only rigid designators are always necessarily true if true and necessarily false if false. Identity statements involving terms that are non-rigid designators (and that are not synonymous) are not necessarily true or necessarily false. It seems to follow from the very conception of a rigid designator that true identity statements between rigid designators are necessarily true. A rigid designator refers to the same object in all possible worlds. If two rigid

designators (in our language) refer to the same object in the actual world, then they cannot fail to co-refer in other possible worlds.

It has been argued by Quine that it may be true that Hesperus is Phosphorus,[40] but since this was an empirical discovery, it cannot be necessarily true. Kripke is now in the position to reply that Quine is mistaken, because he confuses epistemic modality with metaphysical modality. Kripke conceives of both "Hesperus" and "Phosphorus" as directly referring rigid designators. Now, epistemically, if we see a planet in the morning sky and if we see a planet in the evening sky, there is no need that it is one and the same planet each time. Our *a priori* evidence, the reference fixing senses of the respective names, does not require this. As far as we knew at that time these planets could be different planets. That is an epistemic possibility. Given that Hesperus actually is Phosphorus this identity is necessary metaphysically, irrespective of our epistemic situation. That the same planet can be seen both in the morning and the evening will still be contingent though. That Phosphorus is Hesperus can of course be found out empirically. We then know this to be true only *a posteriori* (N&N pp. 100-5). This example is to show that there are *a posteriori* (metaphysically) necessary truths. This includes in principle also necessary truths that are involved in non-trivial essential properties, as one of Kripke's examples show. Assume that it is essential for an object such as a lectern in front of Kripke when he gave his lectures, to be made of the very kind of material it is actually made of. The lectern, if made of wood, would be necessarily made of wood. If there were, counterfactually, a lectern not made of wood in front of Kripke then that could not be the same lectern. Now, that the lectern is made of wood is something we need to find out. For judging from first appearance it could epistemically have been made of ice. That the lectern is made of wood would in this scenario be a necessary truth but an *a posteriori* one (Kripke 1971, pp. 152f). This kind of essential property would not be possible if all necessary truths were *a priori* truths.

Kripke also offers an example of an *a priori* contingent truth. Take the person who introduced the term 'meter' and defined it as the length of a certain bar in Paris.

[40] Both "Hesperus" and "Phosphorus" are assumed to be proper names for the planet Venus, where their reference is fixed differently, i.e. one refers to a certain planet seen in the morning, the other to a certain planet seen in the evening.

That person did not thereby give a definition of the meaning of 'meter'. She rather fixed the reference of the term 'meter' by reference to the length of the bar. It would, however, have been metaphysically possible for that bar to be longer or shorter in counterfactual situations than it actually was then. But for our person the term 'meter' is from the start associated with the then actual length of that bar. She has not found out empirically that this bar was one meter long, she has rather determined that 'meter' shall name the length exemplified by that bar. Kripke holds that this person knows *a priori* that that bar in Paris is one meter long. Since the bar could have been not one meter long in counterfactual situations, this knowledge is about a contingent truth. Hence there are contingent *a priori* knowable truths (N&N pp.55-57).

§II.4.3.2. Kripke's theory of direct reference, Quine's counterexamples and DIP

Kripke's theory of direct reference and in particular his notion of a rigid designator provide the means for rebutting Quine's counterexamples about substitution failure against essentialism. Identity statements such as

i) 9 = the number of planets

are contingently true. The reason is that (i) involves a non-rigid designator. The terms involved in (i) only happen to be co-referential as things are, but they are not co-referential simpliciter, i.e. across possible worlds. It is for that reason that 'the number of planets' cannot be substituted for '9' in modal contexts such as '□(9>5)'. Such contexts implicitly involve not just the actual way things are but also counterfactual situations. Only terms that are co-referential simpliciter can be substituted in such contexts salva veritate. For any two terms that only happen to be co-referential as things are, substitution will be restricted to non-modal contexts. I have already shown how Quine's counterexample about the alleged contingency of

ii) Hesperus = Phosphorus.

is dealt with in Kripke. (ii) is necessarily true given that it is true and involves only rigid designators on Kripke's account, even though it is an empirical discovery that (ii) is true. Important here is that these names cannot be replaced by synonymous descriptions, as Quine and descriptivism would have it, since proper names are directly referring in Kripke, they have no meanings or synonymous descriptions.

Kripke's theory of direct reference seems to allow Kripke to deal effectively and in a principled way with the counterexamples raised by Quine. It is not so clear how and whether it allows Kripke also to deal with DIP, the description independence principle. First, in so far as the counterexamples motivated DIP, that motivation seems to have fallen away. And since proper names and natural kind terms are conceived non-descriptively, it seems to constitute no violation of DIP to refer by means of these 'neutral', directly referring terms. I mean that e.g. proper names have no meaning and thus no analytic truths can be derived from their use. But does this not mean that some properties are essential and other accidental of a 'neutral' object that has as such no (non-trivial) features? One of Quine's examples (1979a, p. 176), that suggest such a view, was that, for the essentialist, a man would be essentially rational but not qua man but qua itself. Clearly, if a proper name refers to some 'object as such' and this is taken to mean that the object as such is featureless, then it seems hard to conceive why that object as such should have any (non-trivial) properties essentially. The theory of direct reference does not hold, however, that particular objects as such are featureless. What it says is that there may, but need not, be a sense associated with a name that fixes the reference of the name, but that sense is not the meaning of the name. That does not mean, though, that the reference of a name is as such a featureless object, a bare particular that is the substrate of its properties. Kripke rejects the idea of bare particulars, but also the idea that individuals are mere bundles of properties (N&N pp. 52f). He seems rather to hold a common sense view of what objects are and what terms refer directly to them, at least in certain cases. When he speaks about how Nixon could have been in counterfactual situations, he makes it pretty clear that the question is how that man called "Nixon" in the actual world, could be under different circumstances.

> "On the other hand, the term "Nixon" is just a *name* for *this man*. When you ask whether it is necessary or contingent that *Nixon* won the election, you are asking the intuitive

> question whether in some counterfactual situation, *this man* would in fact have lost the election." (N&N p. 41)

If someone has heard the name "Nixon" in conversation, he need not thereby know whether that name refers to a man or a woman or a donkey or a military target. He may not associate any sense with that name. But this does not mean that the actual reference as such is a featureless, bare particular. As the quoted passage shows, the reference of "Nixon" is a certain man. And once this reference is established, we can investigate its essential properties. Kripke first rebuts Quine's counterexamples to essentialism by means of his theory of direct reference. He then appeals to common sense, at least in cases of proper names, to hold - as a matter of course – that, for instance, "Nixon" just refers to a certain man. In this way he intends to accommodate DIP, it seems.

There is another point worth noting here. The quoted passage indicates that Kripke assumes as a matter of common sense implicitly sortal essentialism, the view that an individual belongs to the kind it actually belongs to essentially. For, if "Nixon" is a name whose reference just is a certain man then it is implied that Nixon is essentially a man. The italics used by Kripke above indicate that 'this man' is not intended as a reference-fixing description. It would also be unclear what a description such as 'this man' describes. I mean, if we refer to something as 'that white thing' then it makes sense to assume that there is something further underlying that description, say a certain table or a certain man. But there seems nothing that is described as 'this man' apart from this man, not at least on a common sense view as Kripke seems to advocate it. Note though also here that Kripke's implicit assumption of sortal essentialism does not mean that he holds that being a man is part of the meaning of "Nixon". Kripke would arguably deny that. He argues at one point, to take up the given example, that if being a human being were part of the meaning of "Nixon" then we could not be mistaken about Nixon's species. But we could have found out, it seems, that Nixon was in fact an alien with human appearance. This presupposes, however, that 'Nixon is not a human being' is not a contradiction, which it would be if being a human being were part of the meaning of "Nixon". This example confirms Kripke's claim that directly referring terms such as proper names do not have associated meanings (N&N 115f Fn 58).

The general idea of how Kripke tries to meet Quine's counterexamples and DIP should be clear. It seems mainly Quine's anti-essentialism and the underlying descriptivism that prompted Kripke to argue for his theory of direct reference and for the possibility of necessary *a posteriori* statements. In this way Kripke can defend the notion of essentialism as being meaningful. He can thereby also argue for essentialism and *de re* necessity as an intelligible position in answer to the question where necessity has its place, or in what way necessity is involved in logic (i.e. to what degree as Quine puts it).

§II.4.4. Counterfactual truth conditions and understanding

Kripke's concern with *de re* modality seems, as I have said, to arise from his work in quantified modal logic. It is no wonder that Kripke stresses the importance of *de re* modality for truth conditions for our proper understanding of what statements mean:

> "(I) Aristotle was fond of dogs.
>
> A proper understanding of this statement involves an understanding both of the (extensionally correct) conditions under which it is in fact true, *and* of the conditions under which a counterfactual course of history, resembling the actual course of history in some respects but not in others, would be correctly (partially) described by (I). Presumably everyone agrees that there is a certain man – the philosopher we call 'Aristotle' – such that, as a matter of fact, (I) is true if and only if *he* was fond of dogs. The thesis of rigid designation is simply – subtle points aside – that the same paradigm applies to the truth conditions of (I) as it describes *counterfactual* situations. That is (I) truly describes a counterfactual situation if and only if the same aforementioned man would have been fond of dogs, had the situation obtained." (Kripke N&N, p. 6)

This passage is part of an argument against descriptivism. The point seems to be that our understanding of (I), which is a non-modal statement, would be different depending on whether we take "Aristotle" to be a directly referring rigid designator or whether we take it to be synonymous with some definite description, e.g. "the last great philosopher of antiquity". Assuming non-descriptivism, (I) says that the man Aristotle is fond of

dogs. This is a *de re* reading of (I). Assuming descriptivism, (I) says that whoever happens to be the last great philosopher of antiquity is fond of dogs. This is a *de dicto* reading of (I). Clearly these readings have distinct truth-conditions, in particular distinct counterfactual truth conditions. For the difference between the *de re* and the *de dicto* reading here becomes apparent once we consider a counterfactual situation where someone else than the man we call "Aristotle" is the last great philosopher of antiquity. The counterfactual truth conditions for (I) would involve that other man and his inclinations according to descriptivism and the *de dicto* reading. According to non-descriptivism and the *de re* reading the counterfactual truth conditions would still be about the man we actually call "Aristotle" and his inclinations. A proper understanding of (I) seems to involve the counterfactual truth conditions of (I), as Kripke holds, because they clarify, at least in certain cases such as (I), whether a statement is understood as *de re* or *de dicto*. They clarify, in other words, whether a statement is understood as being about a property attributed to an object as such or to an object only under a certain description. Counterfactual truth-conditions and *de re* modality seem in this way, according to Kripke, involved in our proper conception of the truth conditions and our proper understanding of modal but also non-modal statements such as (I).

§II.5. Substantial Essentialist Theses in Kripke

Kripke holds that the theory of direct reference applies to proper names, natural kind terms and to terms referring to natural phenomena, such as 'light' or 'heat' and also to the corresponding adjectives, e.g. 'hot'. He argues correspondingly for essentialist theses with respect to particulars, to natural kinds and to natural phenomena. In all three cases a similar mechanism of how we acquire knowledge about an object applies in Kripke's view. By an act of naming the reference of a directly referring term is fixed by means of ostension or a description, e.g., 'the reference of "cow" = *this kind of thing here*'. It is then a matter of empirical (scientific) investigation to determine what a natural kind so named such as the kind cow is or what a natural phenomenon such as heat is. It is, however, in principle a matter of *a priori* reasoning to determine what kind of properties would be essential to an entity. So essentialist claims have typically an *a*

priori and an *a posteriori* source.[41] An important part of *a priori* reasoning for Kripke seems to consist here of imagination and (common sense) intuitions.[42] Kripke proposes a certain schema for how to establish essentialist claims (Kripke 1971, p. 153). By *a priori* reasoning a universal essentialist principle is established, for instance, if an object consists of a material substance M, it necessarily consists of M. This principle is then applied to a concrete case. For instance, if this table here consists of wood, it consists of wood necessarily. Assume we find out empirically that this table in fact consists of wood. We can then conclude that this table consists necessarily of wood. The resulting essentialist claim is not *a priori*, but neither is it purely *a posteriori*.

It is noteworthy here that Kripke seems in general more interested in showing how the theory of direct reference applies to different subject matters than actually arguing for the substantive essentialist theses themselves. He spends, for one, comparatively little time in N&N on arguing for these theses as such. He draws primarily on defeasible intuitions, imagination and his conception of essential properties to argue from case to case whether a property of a particular is essential or not (e.g. its origin, its material composition etc.). In the case of natural kinds he appeals also to a formerly established 'philosophical' notion of essence. So what Kripke does not do is to develop and defend his own 'philosophical' theory of what the essence of things in general is supposed to be or what constitutes an entity in the first place. He mainly just applies his conception of essential property qua necessary property in the sense of a necessary identity and existence condition. His primary interest seems to be to develop a

[41] Kripke suggests, however, that it may be possible to give some sort of 'proof' for a form of the essentiality of origin thesis that would seem just to follow from his semantic theory (N&N p.114f, Fn56). Salmon (2005, pp.193-216) argues plausibly that such a proof would implicitly have to make a non-trivial essentialist assumption and thus begs the question. Salmon (2005) argues in general against the view that substantial essentialist theses follow just from a theory of direct reference without any implicit essentialist assumptions, but he acknowledges explicitly that Kripke does not in general hold this view (Salmon 2005, p. 196), and I agree.

[42] Kripke's notion of intuition seems to be associated with common sense reasoning, i.e. how the ordinary man, 'uncorrupted' by philosophical training, would reason. This does not mean that Kripke's intuitionism or appeal to imagination is unsophisticated. Kripke frequently employs, for instance, counterfactual reasoning in his arguments. Our intuitions about the use of names or about the identity of objects are considered while we imagine a fictional, counterfactual or still possible, situation in some detail (e.g. N&N pp. 83f).

theory of direct reference and demonstrating its use for establishing possible essentialist theses. This agrees with his general motivation as I have outlined it, namely to argue for the possibility and meaningfulness of (non-trivial) essentialism in principle. And this means further to argue for *de re* modality, which is a way to address the modality question about the place and source of modality.

I will in the following expound the different substantial essentialist theses advocated by Kripke, namely about particulars (§II.5.1), about natural kinds (§II.5.2), and very briefly about natural phenomena (§II.5.3).

§II.5.1. Essentialism about particulars

Kripke argues for certain essentialist theses about particulars. He seems not really concerned with sufficiency properties of particulars and hence not with individual essences or (purely qualitative) trans-world identification. He sympathises, though, with the idea that sufficiency conditions, if there are any, would be expressed in non- purely qualitative terms, i.e. that involve reference to other particulars, rather than purely qualitative terms. I.e. he holds that it makes sense, in certain cases, to identify a particular in counterfactual situations by means of the component parts of that particular. We may for instance consider whether a certain table would exist in a counterfactual situation by considering what would be the case with the molecules of which that table is actually composed. We may identify a certain object in a counterfactual situation as that very table, say because it is constituted by the very molecules (or most of them) that make up the actual table. Kripke does not present any explicit positive view about what a particular is though. He does not suggest that a particular is the sum of its component parts. And he rejects the ideas that particulars are bundles of their properties or just of their essential properties and also that they are bare particulars. He seems rather content with a common sense approach that does not assume any philosophical theory about particulars (N&N pp. 50-2).

The question of essentialism about particulars is what properties could a particular not have failed to have in order to exist or, alternatively, in order to be that very particular. I have already argued above (cf. §II.4.3.2) that even though the kind to

which an object belongs is not part of the meaning of the proper name of the object, Kripke seems to hold sortal essentialism. Sortal Essentialism is the view that an object could not have been of a *radically* different kind than it in fact is (Robertson 2008). Or, according to Wiggins, sortal essentialism is the thesis that if *k* is the fundamental kind of a given object *o*, then *o* is essentially of kind *k*. The fundamental kind is the highest metaphysical kind under which an object falls and which answers to the question 'what is it?'. The (highest) fundamental kind in the case of Nixon is the kind of human beings (Roca-Royes 2011, p. 69f). There seems to be some room for different views about sortal essentialism. It may mean that something cannot belong to a different species, where there is no further sub-species. On a weaker version it could mean that something cannot belong to a different genus. For instance, Beulah the cow could not have been a table on the weak sortal essentialist thesis, but it could have been a donkey (at least metaphysically speaking). Now, Kripke seems to assume sortal essentialism, and in a strict sense. This is strongly indicated by the way he speaks e.g. about Nixon as being a certain man, or about how a certain table, 'this table', could be counterfactually. It is again confirmed when he states that 'items' that are actually gold are essentially gold (N&N pp. 41, 52f, 135). Kripke does not really elaborate or argue for this thesis though, he rather seems to assume it as a piece of basic metaphysics and maybe even as part of his theory of direct reference and common sense.

Kripke argues for or holds a couple of essentialist theses about particulars without thereby taking them to be exhaustive, as it seems. He argues explicitly for essentiality of origin, the thesis that a particular has its origins essentially (Roca-Royes 2011, pp. 68f). He holds essentiality of biological origins for organisms, the view that biological organisms such as human beings essentially stem from the parents and also from the sperm and the egg from which they actually stem. He also holds essentiality of material origins for artefacts, or more generally, for material objects. This is the view that a material object such as a table, if it is actually made of a certain hunk of matter, let's say a block of wood, then it is essentially made of that hunk of matter. And further, if that hunk of matter were essentially made of wood, then the table would essentially be (originally) made of wood (N&N pp. 110-115). Kripke also entertains a slightly different essentialist claim, namely that if an object, say a wooden table is constituted of molecules, then it is essentially constituted of molecules (N&N pp. 126f). This thesis

seems to involve also a natural kind essentialist view, namely about the nature, as Kripke says, of the substances, e.g. wood, of which a particular object is made. Kripke also suggests a kind of sortal essentialism also for material objects such as artefacts. He argues that it would be essential for a table to be a table. If the hunk of wood from which the table actually originates had been processed into a vase instead, then the table would not have come into existence (N&N, pp. 114f Fn57).

§II.5.2. Essentialism about natural kinds

§II.5.2.1. The internal structure of natural kinds

Kripke applies his theory of direct reference also to natural kind terms and argues for a form of natural kind essentialism. This is in general the view that if instances of a natural kind k have a certain structure x, then it is essential to that kind k that all its instances have that structure x.[43] Note that natural kind essentialism so formulated does not, without further argument at least, logically entail that the instances of a kind have the properties, that are essential to the kind, essentially themselves (cf. Roca-Royes 2011, p. 70). E.g. it may be essential to the kind human being that all its specimens are rational. That alone does not entail that Socrates, a human being, is essentially rational. For that result we must further assume sortal essentialism.

Kripke argues in some detail that and how his theory of direct reference applies to natural kind terms and thereby makes it possible to hold essentialist views about natural kinds. He suggests the picture that the reference of a kind name is fixed in an act

[43] Natural kinds are in general called 'natural' because they are supposed to correspond to a real structure of the natural world. Naturalism about classifying things in the world is the view that there are genuinely natural, objective ways of classification. Naturalism is associated with scientific realism, the view that the best scientific theory, whose success provides a reason to believe in it, classifies things in a natural way. Kripke seems to hold both scientific realism and naturalism. A conventionalist about natural kinds, in contrast, denies that a natural classification is possible, either because of epistemic limitations of human beings to discover the right natural classification, or because there is not even a fact of the matter about the world falling into natural kinds. On the latter view the classifications we use would reflect e.g. our social practices or special, pragmatic interests as human beings (Bird/Tobin 2016).

of naming by ostension or by description. By 'suggesting a picture' I mean here that Kripke seems not to think that such naming ceremonies must in fact have taken place exactly in this somewhat 'artificially' seeming way, but rather that it seems in principle not implausible and also theoretically helpful to assume such a picture. So, someone may have fixed the reference of 'gold' as being the chemical substance instantiated by a certain sample of gold in his hands. And someone may have once fixed the reference of 'cat' as being 'that kind of thing' pointing or referring to a paradigmatic instance, i.e. some cat (N&N, pp. 122, 135). The reference is fixed here by an identity statement between the reference of the name introduced and the sample or paradigm instance referred to by ostension. If a reference is fixed by means of identifying properties, then these properties will, as a rule, be appearance properties and do as such not become part of the meaning of the kind name. So descriptions like that tigers are carnivorous, quadruped and tawny yellow in colour etc. are at best reference fixing descriptions, Kripke holds, but they are not part of the meaning of the kind name. If the given description were part of the meaning of "tiger" then speaking of a three-legged tiger would be a contradiction, but it is obviously not. Note here that not even the genus of a kind is part of the meaning of the kind name in Kripke's view. For instance, it is not part of the meaning of 'tiger' that tigers are mammals or even animals. It could have been the case that we have been actually mistaken about the genus, judging erroneously from the mere appearance of paradigm instances. A fancy example Kripke gives here is that cats look like animals, but they may have turned out (in the epistemological sense) not to be animals but in fact little demons. Since it seems, again, not to be a contradiction *in adjecto* to say that cats turned out not to be animals, it seems not part of the meaning of the kind name 'cat' that cats are animals (N&N pp. 120, 122).

Once the reference of a kind name is fixed, it can be empirically investigated what the reference of the term is. This is for one the business of the respective science, e.g. biology or physics. But there also is a general assumption in Kripke that the nature, as he says, or the essence 'in the philosophical sense' (N&N p. 138), which I will discuss in a moment, is an internal or microscopic structure as opposed to the appearance of a specimen or of a sample of a kind. The 'nature' of gold, for instance, seems to involve that gold has the atomic number 79. Kripke then argues for essentialist theses by appeal to identity statements about theoretical identifications involving the

internal structure of kinds. For instance, gold is identified by our scientific theories with the element with the atomic number 79. For Kripke this identification comes down to an identity statement with the rigid designators "gold" and "element with atomic number 79". This identity statement is thus necessarily true (if it is true at all). Hence Kripke concludes that gold is necessarily the element with the atomic number 79. Similarly, water is necessarily H2O, since it is the same as H2O. Also animals are supposed to have some internal structure, presumably involving their genetic code or their internal organs. Kripke notes that insofar as other properties, for instance color or metallic properties, follow from the internal, atomic or molecular structure, these properties would be necessary properties as well (N&N pp. 116, 120, 123-5).

Note here that identity statements are the paradigm case, if not the central and fundamental case of a necessary relation, from which necessary predications can be derived in Kripke. There have been objections in the literature, though, as to whether these theoretical identifications really amount to identity statements. Oderberg (2007 pp. 12-14), for instance, objects that "water = H2O" (as Kripke seems to hold) is either ill-formed or necessarily false. He suggests the view that scientists have discovered that water is constituted by hydrogen and oxygen according to the molecular arrangement expressed by "H2O". If so then "H2O" seems to denote an abstract chemical formula, but not a kind, as "water" does. The identity statement that 'water = H2O' would thus be false and necessarily so or ill-formed (cf. Oderberg 2007 pp.12-14 and Bird & Tobin 2016 for more objections). So, there seems to be a possible problem for Kripke's view, namely about what actually is supposed to be the same or identical in such theoretical identifications as Kripke assumes it. I will not pursue this issue here, however.[44]

[44] There is also a somewhat open question about whether Kripke is a realist or nominalist about natural kinds. According to (Bird/Tobin 2016), realism about natural kinds holds that natural kinds are real, objective entities. Fundamentalist realism conceives natural kinds as entities sui generis, while reductionist realism conceives them as being reducible e.g. to universals. Nominalism about natural kinds, in contrast, can accept that there are natural classifications, but it would deny that natural kinds are real entities. Kripke does not explicitly endorse any of these positions. Many passages in Kripke suggest that he is a realist of some sort about natural kinds, though a few suggest that he is a nominalist. That Kripke is a realist is indicated when he states for instance that that we use 'gold' as a term for a certain kind of thing and that the original concept of cat is 'that kind of thing'. And he says that we use the term 'tiger' to designate a species or natural kind. But he says also that tigers seem to form a single kind (N&N pp. 116-

§II.5.2.2. The 'philosophical' notion of essence in Kripke and 'Lockean' real essences

Kripke's picture of natural kind essentialism, and also about physical phenomena as we will see, seems in important respects similar to a kind of essentialism as John Locke roughly held it. Kripke does not mention explicitly Locke, but the similarities are striking.[45] It seems thus helpful to note roughly what Locke says about essences, not just to give some possible background for Kripke's ideas, but also to understand Kripke's remarks about 'essence in the philosophical sense' and 'nature'.

Locke endorses the so-called corpuscular hypothesis. This scientific thesis states that observable bodies consist of insensible, little bodies, i.e. corpuscles, which transfer motion mechanically, by impact on others. It comprises also the idea that certain qualities on the level of the corpuscles cause observable qualities of a body (Kochiras 2014). Locke speaks in this context of primary and secondary qualities of an object. The primary qualities of an object are the solidity, extension, motion or rest, number and figure of the corpuscles. Secondary qualities are for instance, sounds, tastes or colours. They are conceived as 'powers' that an object possesses due to its primary qualities to produce certain sensations in us. Locke was pessimistic about science ever being able to discovering the primary qualities, i.e. the internal structure and motion of the corpuscles. Kripke, who also endorses the view that bodies consist of a sort of corpuscles, namely molecules and atoms etc., can rely on the findings of science about that internal structure. He thus holds that we can know about the internal structure of things. Locke calls the internal constitution of an object the 'real essence' of that object, while the observable qualities, which depend on the real essence, and which we associate with the object, constitute the so-called 'nominal essence'. The nominal essence of gold, for instance, is the set of abstract qualities such as yellow, shining color, malleability etc. (Mackie 1976, pp. 12, 85-8, 101). It is again easy to see the parallel between Locke and Kripke. The real essences in Locke correspond to the

8, 121). The latter could be interpreted as indicating a nominalist view as saying that all tigers fall under a single natural classification. The passages indicating that Kripke is a realist are dominant, however.

[45] Mackie (1974) seems basically to make just this point, see also Lowe (2011) for a similar view.

internal atomic and molecular structures of things, and plausibly also to the genetic structure of organisms in Kripke. The nominal essences in Locke correspond roughly to the reference fixing appearance properties in Kripke. When Kripke says

> "In general, science attempts, by investigating basic structural traits, to find the nature, and thus the essence (in the philosophical sense) of the kind." (N&N p.138)

he seems plausibly to mean by 'nature' and 'essence in the philosophical sense' something in the spirit of Lockean real essences. That would mean that these essences in a philosophical sense are the internal structures of natural kinds. And these essences would then be natures presumably in the sense that the internal structure is the cause for the secondary, observable qualities of specimens of the kind. This view agrees with what Kripke says in (N&N, p. 125), namely that in case that for instance color and metallic properties 'follow' from the internal structure of a natural kind such as gold, then these properties would be necessary properties of gold as well. Further, Locke argues against the influential scholastic tradition of his time (Mackie 1976, p. 86). It seems thus plausible that the concept of a 'nature' is adopted from the Aristotelian tradition. 'Nature' would then mean a principle and cause of motion and rest. The dispute between advocates of the corpuscular theory such as Locke and the Aristotelian scholastics seems then to be about what that principle, nature, actually is. Is it a substantial form, in particular a soul or 'entelecheia', as Aristotelians would hold, or is it rather associated in a sense with the structure of the corpuscles that constitute an object? Kripke in fact contrasts in an example the view that a particular object is made of molecules with the view that it is composed of some 'ethereal entelechy' (N&N pp.126f). The latter seems again clearly a reference to the Aristotelian notion of entelecheia.

Kripke seems in general, similarly to Locke, to identify the internal structure of an object with its nature and essence in the philosophical sense. This sense of essence seems confined to natural kind essentialism and plausibly to essentialism about natural phenomena. When Kripke speaks of the essence elsewhere - without adding "in the philosophical sense"- for instance when he speaks of the essence of the number 9 (N&N p. 48), he seems not to have the philosophical sense of essence in mind. Numbers have

no internal structures, at least not in the sense in which gold or tigers have them. And Kripke's talk of science as being concerned with the natures of kinds (cf. quote above) seems not to include mathematicians and the nature of the 'natural kind' number. The sense in which Kripke talks about essence in relation to the number 9 seems rather to correspond to Kripke's conception of essential property as necessary identity and existence condition in general. The conception of essence in the philosophical sense seems further not logically entailed by Kripke's conception of an essential property (as necessary existence and identity condition). And reversely, the fact that something has a certain internal structure does not logically entail that it has that structure necessarily, at least if we do not also assume that this structure is part of what something is. Some philosophical argument seems required to hold that essential qua necessary properties derive from the internal structure of a kind. Kripke's theory about theoretical identifications and his appeal to modern science about what some stuff is seem intended to serve that purpose.

Kripke seems to be well aware that the essence in the philosophical sense of a natural kind is associated with what is causally basic to that kind. This causal role seems, however, not what makes a property or an internal structure essential qua necessary identity condition for Kripke.

> "So if this consideration is right, it tends to show that such statements representing scientific discoveries about what this stuff *is* are not contingent truths but necessary truths in the strictest possible sense. It's not just that it's a scientific law, but of course we can imagine a world in which it would fail. Any world in which we imagine a substance which does not have these properties is a world in which we imagine a substance which is not gold, provided these properties form the basis of what the substance is. In particular, then, present scientific theory is such that it is part of the nature of gold as we have it to be an element with atomic number 79. It will therefore be necessary and not contingent that gold be an element with atomic number 79. (We may also in the same way, then, investigate further how color and metallic properties follow from what we found the substance gold to be: to the extent that such properties follow from the atomic structure of gold, they are necessary properties of it, even though they are unquestionably not part of the *meaning* of 'gold' and were not known with *a priori* certainty.)" (N&N p.125)

Kripke (N&N, pp. 123-5) has just argued that we would not call an item gold that looks like gold but that has another atomic number. His point is that the atomic number, or the internal structure, determines the reference of the term "gold". Having this atomic number is thus necessary - and thereby essential - for being gold. One of Kripke's points in the quoted passages seems to be that if gold had its internal structure just as a matter of a scientific law, then this would not constitute the same strict necessity required for being metaphysically necessary and essential for being gold. The mere fact that the internal structure of gold is causally basic for other properties of gold does not qualify that structure as being essential to gold. What is required is rather that this internal structure is determinative of the reference of "gold" and a necessary identity condition of gold.

Kripke appeals to the notion of essence in the philosophical sense in support for his essentialist views about natural kinds (and phenomena). The essence in the philosophical sense of a natural kind is both individuative, and thus necessary, to that kind and about the basic causal properties of that kind. That an essence in the philosophical sense is necessary to its respective kind allows Kripke to conceive it as related to his natural kind essentialism and, more generally, to modal essentialism. Being causally basic as such seems not definitive for being essential to a natural kind in Kripke. Also, colour and metallic properties of gold, for instance, to the extent that they follow necessarily from the internal structure of gold, are considered to be necessary and thus essential to gold, even though they are not (basic) causal but caused properties of gold. Further, Kripke's essentialist conceptions need to be applicable to properties of particulars as well as to properties of natural kinds, on pain of having two homonymous notions of essentiality. Socrates' property of stemming from his actual parents must be essential to him in basically the same sense in which having the atomic number 79 is essential to gold. And that sense is to be necessary, and not to be causally basic. That Socrates stems from his actual parents is not a causal property of his, but a necessary one.

§II.5.3. Essentialism about natural phenomena

I will very briefly address Kripke's essentialist claims about natural phenomena. Examples of theoretical identifications in the case of natural phenomena in Kripke are for instance that light is a stream of photons, that heat is the average kinetic energy of molecules or that lighting is electrical discharge. The semantic mechanism is in principle the same as with natural kinds, though it also contains an explicit element of causality. A certain microscopic phenomenon causes a certain observable effect, such as for instance a stream of photons causes visual impressions in us. By means of this impression we can refer to the cause that we call 'light' and fix the reference of light in this way. It is again not part of the meaning of the term light that light causes the visual impression it actually causes in us. Light would exist even if we did not exist. Terms like 'light' or 'heat' etc. refer directly to their references, i.e. the cause of a certain observable effect. Through scientific theorizing and investigation it is found out, so goes the idea in Kripke, that light is the same as a stream of photons. This is again an empirically discovered identity statement involving only rigid designators and thus a necessary and *a posteriori* truth (N&N 116, 129-134, 136f). I will not discuss essentialism about natural phenomena further here, nor Kripke's essentialist claims about sensations such as pain.

§II.6. Concluding Remarks

Kripke's modal essentialism, as I presented it here, emerges in the context of quantified modal logic which seeks to provide modal logical calculi that represent the modal logical structure of reality. The question is how exactly modality, and in particular necessity is involved in the logical structure of reality, or in other words, where does modality and in particular necessity have its place and source. This is what I called the modality question, and this seems to be the question that Kripke's essentialism seeks to answer. Quine argues that necessity should at best be conceived in terms of analyticity or logical truth and thus as *de dicto*. The notion of (non-trivial) *de re* necessity, which is intimately associated with modal essentialism, is meaningless according to Quine. Kripke argues that the notion of *de re* necessity is not meaningless and that necessity

has its source in the way objects possess their properties. It is to that end that Kripke is largely concerned with refuting descriptivism, which underlies Quine's arguments, and to advocate a theory of direct reference, and rigid designation, about certain terms, which is congenial to modal essentialism. Kripke also argues for a strict separation between metaphysical and epistemic necessity and for the possibility of *a posteriori* necessary truths (and *a priori* contingent truths). Assuming Kripke's theory of direct reference, and the concomitant semantic externalism, as well as some common sense, non-trivial essentialism appears to be a meaningful position. To show this seems to be the main focus in Kripke's essentialist works, rather than to present a systematic ontological theory of objects and their essences. Kripke argues for several essentialist theses about particulars, natural kinds and natural phenomena, though. He appeals to the notion of an essence in the philosophical sense in the context of his natural kind essentialism. This notion of essence is about causally basic properties of a natural kind. Relevant for Kripke seems to be, however, that the essence in the philosophical sense is necessarily possessed by the respective kind, rather than that it is about basic causal properties.

CHAPTER III

FINE'S ESSENTIALISM

§III.1. Introduction

Kit Fine develops his essentialist views, just as Kripke, within the context of quantified modal logic. He conceives essentialism in his early papers as modal essentialism (e.g. Fine 1978, p. 288), before he criticizes and rejects modal essentialism in his influential paper *Essence and Modality* (1994a). He argues in particular against the modal essentialist's equation of the concepts of necessary property and essential property. He holds that while all essential properties of an object O are necessary properties of O, the reverse is not the case. Fine advocates an account of essence - or synonymously in Fine: of 'nature' or of 'identity'[46] or of 'being'[47] – in terms of the notion of real definition. According to this 'Real Definitional Account' of essence, or 'Definitional Essentialism' as I will say, the essence of an object O is specified in the real definition of O. An essence can, in this way, be identified with a set of propositions or, alternatively, with a set of essential properties that 'define' an object, according to Fine. Fine further stresses the association between the question, *what* some object O is, and the essence of O.[48] Fine's characterisation of definitional essentialism gives rise to the impression, *prima facie* at least, that definitional essentialism is Aristotelian in spirit. For, both Fine and Aristotle hold that essential properties are not just necessary properties. The latter rather follow from the former in a sense. And they both conceive essences as closely associated with real definitions and with the question what something is. Fine also characterises himself at some point explicitly as a Neo-Aristotelian and as being committed to the Aristotelian doctrine of hylomorphism (Fine 1994b, p. 14). And he holds that his conception of metaphysics, to which the concept of essence is central, is

[46] Fine (1995c p. 69 FN 2) explicitly states that he uses the terms "nature", "identity" and "essence" synonymously.

[47] Fine (1995a, pp. 270, 275) speaks of 'identity' and 'essence' as if these terms were synonymous with 'being' in the sense of the being of an object.

[48] Kripke speaks of what some natural kind or phenomenon is, but he does not pose that kind of question about particulars (e.g. N&N pp. 113-6, 125, 133).

broadly Aristotelian (cf. Fine 2011a, p. 8 Fn1, 9f). I will address the question whether this impression that Fine's essentialism is Aristotelian in spirit is justified or not, at least in certain respects, in chapter IV. My present purpose is with providing an exposition of Fine's definitional essentialism including his principal motivation and what it aims to explain. And here it seems that Fine is mainly concerned with explaining where modality and in particular metaphysical necessity has its source. The principal point and motivation for Fine's (1994a) rejection of modal essentialism seems to be that modal essentialism is unable to assign the sources of necessary truths adequately to the objects and their essences from which these necessary truths plausibly derive. Fine's definitional essentialism aims at explaining adequately what modal essentialism fails to do, namely how metaphysical necessity is grounded in the essences and essential properties of things as its source.[49] Metaphysically necessary truths should - in principle - be analysable into essentialist truths on that account, among them truths that derive from the essences of first order logic objects (such as Beulah the cow). So Fine seems basically concerned in his essentialism with what I called the 'modality question' in chapter II, i.e. where modality has its place and source in reality. Note that essences ground metaphysical necessity in Fine, not normative and natural necessity, which Fine distinguishes from metaphysical necessity. Fine characterises metaphysical necessity in terms of essence, but he also conceives it more intuitively as necessity in the strictest sense (Fine 2002, p. 254, 279; 2012, p. 38). His notion seems roughly to correspond to Kripke's. Talk about modality in this chapter and beyond is by default intended to refer to metaphysical modality. Note further that Fine commits to very few substantial essentialist theses explicitly in his general essentialist writings with which I am concerned here.[50] Yet he frequently assumes several such theses, for instance the essentiality of origin thesis, in examples to explain his views. And he seems generally open to all sorts of substantial essentialist views discussed in the literature. Fine develops his definitional essentialism in more recent papers, in which he shifts the focus from the essences of objects to the essences of predicables as a more general theory of essentialism. He also connects his essentialism in a sense with his theory of grounding

[49] In general I do not use the term 'ground' and its cognates in the technical sense in which Fine (2001) introduces this notion, if the context does not indicate otherwise.

[50] I will in particular not deal here with Fine's papers specifically on hylomorphism.

such that essences are conceived as constitutively necessary conditions and grounds as constitutively sufficient conditions, for some proposition to hold. This development seems not to result in a substantial change of the basic ideas underlying Fine's essentialist views though.

In the following I will address Fine's principal motivation to advocate definitional essentialism, in particular his concern with the sources of necessity and his critique of modal essentialism (§III.2). I will then expound Fine's definitional essentialism including the associated conception of ontological dependence (§III.3). I continue with an outline of how Fine connects grounding with his definitional essentialism in his recent papers (§III.4), before I address the kinds of understanding involved in Fine's definitional essentialism, the relation between essence and metaphysical necessity in more detail and the different ways in which Fine classifies kinds of necessities (§III.5). Note that I will, as with Kripke, be concerned with Fine's 'philosophical' views and not with his technical ones (i.e. his logic and semantics of essence).

§III.2. Dialectical Background – The Modality Question & Fine's Criticism of Modal Essentialism

§III.2.1. The source of modal claims: generalism and singularism about necessity

Fine thinks of essentialism in his early works (before (Fine 1994a)) as modal essentialism. He explicitly characterises essentialism as the metaphysical view that objects as such have necessary properties, i.e. independent of some canonical way of how they are described. The anti-essentialist or *de re* sceptic, as Fine labels him, holds in contrast that no object as such has necessary properties (Fine 1978b, p. 288; 2005a pp. 19f).[51] The 'early' Fine already holds certain views that seem to direct him towards definitional essentialism. For one, he holds that anti-essentialism basically derives from 'generalism' about metaphysical necessity. That is the view that necessity is ultimately general, such that the fundamental formulation of modal claims need not make

[51] Fine 2005a was originally written in 1984 (cf. Notes in Fine 2005a)

reference to individuals or particulars, i.e. of first order logic. On this view, there are no 'singular' necessities that indispensably involve particulars (Fine 2005a, pp. 20-22). This view seems, in other words, to hold that all cases of *de re* modality can ultimately be reduced to cases of *de dicto* modality. That means that there are no irreducible Russellian or singular propositions with first order logic particulars as constituents. Fine conceives the distinction between *de re* and *de dicto* modality here as an ontological or metaphysical distinction in the following sense: *de re* modality is about the mode in which an object as such fulfils a condition, while *de dicto* modality is about the mode in which an object conceived under a certain description fulfils a condition. This conception of the *de re*/*de dicto* distinction reflects the opposition between the anti-descriptivist essentialist and the anti-essentialist descriptivist. The latter holds that the idea of an object as such fulfilling a condition necessarily does not make sense.[52] Fine contrasts this conception with an alternative one that is not metaphysical but belongs to the philosophy of language. That alternative conception is about the question of how quantification and satisfaction of conditions are interpreted and intelligibly expressed. The difference between *de dicto* and *de re* modality amounts here to a difference between modal operators ranging over free variables (*de re*) and those that do not (*de dicto*).[53] The early Fine further holds that the real issue with essentialism is not whether it is an intelligible position or not. This problem is about whether formalised modal *de re* expressions are intelligible and belongs, in Fine's view, to philosophy of language and not to metaphysics. For, the anti-essentialist may well concede that *de re* modal discourse is intelligible insofar as it can be reconstructed as *de dicto* modal discourse. If so, then the mere intelligibility of essentialism or *de re* modal discourse cannot be the basic question about essentialism. So whether or not it makes sense that a modal operator ranges over a free variable is not the point. The basic question is rather, Fine holds, metaphysical, namely what the ontological ground for *de re* modal discourse is.

[52] Fine seems to have in principle Quine's anti-essentialist critique, as I expounded it in §II.3, in mind when he characterises the anti-essentialist position. I thank Martin Lipman for his comment here.

[53] These two conceptions of the *de re* / *de dicto* distinction are basically the ones I introduced in (§II.2.3) as the informal and the formal characterisation. The difference is that Fine assigns them explicitly to metaphysics and philosophy of language respectively, and that the problem with the latter is identified as being about the intelligibility of expressions.

I.e. is it ultimately *de dicto* modality or is *de re* modality irreducible? (Fine 2005a pp. 20f, 2005b pp.40-3).[54]

The early Fine focuses in this way on the actual, ontological source of modal claims rather than on the intelligibility of its expression. Since he associates anti-essentialism with generalism, essentialism would, in contrast, be associated with 'singularism' about necessity, as it may be called. This would be the view that the fundamental formulation of (at least certain) claims about what is metaphysically necessary needs to make reference to particulars. These claims are irreducibly grounded in or involve particulars. It is this very concern with the source of necessity that is central in Fine's criticism of modal essentialism, to which I will turn next.

§III.2.2. Fine's critique of modal essentialism

Fine's concern with the source of metaphysical necessity is evident in his criticism and rejection of modal essentialism in (Fine 1994a pp. 1-10). Modal essentialism conceptually 'assimilates' essence to metaphysical necessity, i.e. it conceives of essence in modal terms. Fine rejects this view and argues that it is the other way around, i.e. metaphysical necessity should be conceived in terms of essence, which grounds metaphysical necessity. Fine focuses his critique on this conceptual assimilation and raises a number of counterexamples against it. He makes his point with respect to essential properties, which modal essentialism in its simple form characterises as follows (where 'P' is a property and 'a' and 'b' individuals):

(M) P is an essential property of a iff it is necessary that a has P.

Fine characterises two variants of modal essentialism, corresponding to Kripke's alternative conceptions of essential properties.[55] The 'modal existential' variant holds

(ME) P is an essential property of a iff it is necessary that a has P if a exists.

[54] Fine 2005b was originally published in (Perry & Co. 1989, pp. 197-272)

[55] cf. §II.4.1

The ‘modal identity’ so to say would be

> (MI) P is an essential property of a iff it is necessary that any b has P if b is identical to a.

On Fine’s view, (MI) collapses either into (M), if it is taken to have no existential import, or into (ME), if it is taken to have existential import. Fine does not deal with (MI), neither will I.[56] Fine gives a couple of counterexamples to the equivalence between essential and necessary property assumed in modal essentialism. These counterexamples are supposed to demonstrate that expressions of essentiality exhibit a certain sensitivity to source that the concept of necessity does not exhibit. This difference is supposed to show that it is a mistake to conceive essentiality in terms of metaphysical necessity or even to hold that ‘essential property’ and ‘necessary property’ are co-extensional terms. Fine’s most prominent counterexample is about sets. It assumes that, on an allegedly plausible view about sets, for any object, if it exists, there is *ipso facto* a singleton with that object as its sole member. Hence, it is necessary (by assumption about sets) that if Socrates exists then he belongs to the singleton {Socrates}. Consider now the following sentences:

> (1) Socrates is essentially a member of {Socrates}.
> (2) Socrates is necessarily a member of {Socrates}.

According to (ME) (1) and (2) are mutually implied. But while (2) is true, (1) is intuitively false, Fine believes. The reason is, as I understand it, the term ‘essentially’, in contrast to ‘necessarily’, implies that the source of the essential attribution expressed in (1) is the logical subject, Socrates, and not {Socrates}. In other words, (1) expresses that it is part of the essence of Socrates, that he is a member of {Socrates}. But intuitively, Fine holds there is nothing in the essence of Socrates that demands that Socrates belongs to {Socrates}. This is also evident in what is required for our

[56] It is interesting, though, that Fine’s essentialism focuses on identity and that (MI) seems in a sense closest to his own view.

understanding of what Socrates is. To understand what Socrates is, Fine argues, we need not know that Socrates belongs to {Socrates}. Consider in contrast

(3) {Socrates} essentially contains Socrates as a member.
(4) {Socrates} necessarily contains Socrates as a member.

Again, the term 'essentially' indicates that the subject, {Socrates}, is the source of the essential predication. In this case (4), and also (3), are true according to Fine. For, it seems to be part of the essence of {Socrates}, of what it is, that it contains Socrates. And we understand what {Socrates} is partly by knowing that it contains Socrates. Again, the point here is that the term or predicate modifier 'essentially' links the source of the essential predicate to the subject as its source. (3) is true, because it is part of the essence of {Socrates}, that it contains Socrates. The concept of essence is, in this sense, source sensitive, whereas the concept of necessity is not. (2) is true, in contrast to (1), because 'necessarily' does not imply an equivalent link between the necessity of a predicate and its source in the subject. Given this difference, not all necessary properties of an object O will be essential properties of O, contrary to modal essentialism. Some necessary properties of an object will have their source also or only in the essences of other objects. Socrates' necessary property of being the sole member of {Socrates}, for instance, has its source in the essence of {Socrates}.

Another of Fine's counterexamples starts from the uncontroversial assumption that Socrates, if he exists, is necessarily distinct from the Eiffel Tower, if it exists. It would follow on the modal existential account that it is an essential property of Socrates' to be distinct from the Eiffel Tower, and that it is an essential property of the Eiffel Tower to be distinct from Socrates, if they both exist. But this again is implausible, Fine holds, for there is nothing in the essence of Socrates that connects him in any special way to the Eiffel Tower. The point is again that the concept of essence is sensitive to source, whereas the concept of necessity is not. The apparent thought is that Socrates is not essentially distinct from the Eiffel Tower, because this distinctness is grounded not only in the essence of Socrates, but also in the essence of the Eiffel Tower (cf. Fine 1995c, p. 54). Socrates is, however, necessarily distinct from the Eiffel Tower,

because the modifier ‘necessarily’ is indifferent about whether the source of that necessary truth lies in the subject or in objects figuring in the predicate.

Another kind of objection involves necessary truths. According to modal essentialism, Socrates would have the necessary property that any necessary truth holds, such as ‘2+2=4’ or that the Eiffel Tower, if it exists, is extended. Again, these properties seem not to be part of Socrates’ essence. The source of the necessity of these truths and of the corresponding property of Socrates’ lies rather in the essences of other objects, of certain numbers and of the Eiffel Tower. Fine concludes from these, and further examples, that it is not essence that should be conceived in terms of necessity, but necessity that should be conceived in terms of essence. For any necessary truth will be grounded in the essence of one or more objects. Fine’s rejection of generalism about metaphysical necessity and his concern with the source of metaphysical necessity seems to direct him towards this criticism of modal essentialism.

§III.3. Fine’s Real Definitional Account of Essentialism

Fine develops his definitional essentialism originally in (Fine 1994a, 1995ac, but also 1995b and 2000). This ‘original’ account is developed and somewhat modified in more recent papers (Fine 2011a, 2012, 2015) where Fine connects his essentialism with his theory of ground and modifies his original conception of essence. He conceives essences originally as being essences of objects, where a property or equivalently a proposition is essential to an object. In his recent works he develops what he calls a ‘sententialist account of essence’, where he conceives essences as ‘predicational essences’ and ‘objectual essences’ as special cases thereof. A predicational essence is the essence of a ‘predicable’, that is, of a concept or a property[57] in its predicational function as it appears in a proposition, such as the concept cow occurs in ‘Beulah is a

[57] Note that Fine speaks frequently of concepts as if they were mind-independent objects without making his view explicit or explaining their relation to properties. He speaks for instance of the objectual and predicational essence of “…a concept or property (or the like)” (cf. Fine 2015f, p. 298). And he claims that logical necessities have their source in the essences of all logical concepts rather than in the objects to which these concepts refer (cf. Fine 1994a, pp. 9f).

cow'. I will address both Fine's original and more recent account of essence, which seem to be based on the same central ideas. My focus lies on the former, though, since it is motivated and expounded in more detail. I will start with an exposition of the central ideas of Fine's definitional essentialism as he presents them in his original account (§III.3.1), and clarify briefly the scope of objects that seem to have essences in Fine's view (§III.3.2). I will then address Fine's conception of real definition, in particular the different canonical forms of essentialist claims in his original and recent works (§III.3.3), before I expound his conceptions of constitutive and consequential essence and of ontological dependence (§III.3.4). I will address the connection of essence with explanation, constitution and understanding in later sections.

§III.3.1. The central ideas of Fine's definitional essentialism

> "My point, rather, is that the notion of essence which is of central importance to the metaphysics of identity is not to be understood in modal terms or even to be regarded as extensionally equivalent to a modal notion. The one notion is, if I am right, a highly refined version of the other; it is like a sieve which performs a similar function but with a much finer mesh.
>
> I shall also argue that the traditional assimilation of essence to definition is better suited to the task of explaining what essence is. It may not provide us with an analysis of the concept, but it does provide us with a good model of how the concept works. Thus my overall position is the reverse of the usual one. It sees real definition rather than de re modality as central to our understanding of the concept." (Fine 1994a, p. 3)

The concepts of essence and of essential property are primitive in Fine's definitional essentialism. They are not analysable in fundamentally different terms, such as in terms of necessity, as modal essentialism holds. Fine rejects in particular the bi-conditional

(M) P is an essential property of a iff it is necessary that a has P.

However, Fine accepts the left to right direction ('$\rightarrow$'). He accepts that all essential properties of an object O are also necessarily possessed, at least if O exists; but he denies that all necessary properties of an object O are also essential properties of O

(Fine 1994a, p. 4). The concept of essence may be primitive. Nevertheless, it can be illuminated, particularly through its close link, on Fine's view, to the notion of real definition. Definitional essentialism holds that objects in general, and not just words, can be, at least partly, defined in real definitions. And it is the essence of an object O that is specified in the real definition of O. Fine holds that metaphysics is centrally (though not only) about the identities or essences of things, about what they are, and about the concept of essence itself. The concept of essence is in this sense constitutive of metaphysics in Fine's view. It allows us to characterise fundamental metaphysical notions such as the notions of substance and ontological dependence, and in general to characterise objects in a way that just cannot be otherwise done. For instance, we can characterise a person as being essentially a person but maybe not as having essentially a body, something that may not be expressed in other terms (Fine 1994a, pp. 1-3).

The principal and basic theoretical role of Fine's conception of essences in his definitional essentialism seems to be that essences serve as the source of metaphysically necessary properties of things, or more generally of metaphysically necessary truths:

> "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.
>
> Other familiar concepts of necessity (though not all of them) can be understood in a similar manner. The conceptual necessities can be taken to be propositions which are true in virtue of the nature of all concepts; the logical necessities can be taken to be the propositions which are true in virtue of the nature of all logical concepts; and, more generally, the necessities of a given discipline, such as mathematics or physics, can be taken to be those propositions which are true in virtue of the characteristic concepts and object of the discipline." (Fine, 1994a, p. 9f)

Fine speaks of 'metaphysical necessity' in two related senses, as I will explain below. In one sense, metaphysical necessary is any truth that derives from the essences of things. In a stricter sense, metaphysically necessary are only those truths that derive from the essences of 'all objects whatever'. I am concerned with the first sense here. According to Fine we should not try to understand and conceive the identity, or essence, or nature of an object through its necessary properties, as the modal essentialist holds. Rather, we

should conceive and understand metaphysical necessity, how objects are and could not fail to be, through the essences and essential properties of the objects. Socrates may have the necessary property of belonging to {Socrates}, but this does not entail that Socrates has this property essentially. Essential properties do not reduce to necessary properties; the reverse is the case.

This role of essences to ground necessity seems closely related to Fine's equation of essence and identity. As I understand Fine, the essence of an object O is basically about what the identity in the sense of the 'uniqueness' of O, as I will say, consists in, or at least an approximation of uniqueness. It is about the sameness and difference of objects. Being unique here refers not to the way things actually are, such that it would be unique to Putin to be the actual president of Russia. The essence of an object O is rather what makes O different from (all) other objects, actual or possible, such that it determines in consequence the basic modal profile of O as such, the way O must be, could be or could have been. This does not mean that Fine holds that there are (non-trivial) individual essences of things, where an individual essence of an object O is a property that is both necessary and sufficient for being O. But it seems that essences in Fine would – *ideally* – be (non-trivial) individual essences. So, my interpretation that essence in Fine is about uniqueness should be taken here to express a desideratum rather than a commitment of Fine's, though a desideratum implicit or ingrained in his conception of essence. This interpretation is supported by Fine's synonymous use of 'essence' and 'identity'. 'Identity' seems to be associated with trans-world identity, even though Fine does not use that term or express his views in terms of possible worlds. And he would arguably reject the modal essentialist's conception of trans-world identity as being too wide, similar to his rejection of the modal essentialist's conception of essential property. Nevertheless, essence qua identity in Fine seems to be about how an object is 'in any possible world in which it exists'. The association of identity (ideally) with uniqueness is also supported by Fine's examples of essential properties and real definitions that differentiate individuals from other individuals of the same kind. Fine suggests, for instance, that a particular water molecule may be defined in terms of its particular constituent atoms or a set in terms of its members (Fine 1994a p. 14). The suggested definition of a set determines a set uniquely, given the usual assumption that any two sets with the same members are the same set. The proposed

definition of a water molecule would need some further specification to make it uniquely determinative, however, for any two water molecules with the same constituents would be identical, even though one has ceased to exist before the other came into existence. But even so, the proposed definition differentiates a certain water molecule not just from objects of other kinds, but from other particular water molecules, namely those with different constituents. The idea in Fine seems thus to be that a real definition determines an object as much as possible in approximation to determining it uniquely. Essential properties that are typically shared with other objects or that are purely qualitative, such as sortal properties, are part of what makes an object unique. It is only in a later paper, first published in 2005, that Fine basically confirms this interpretation:

> "In specifying what a set is, we must state two things. First, we must state what general kind of thing it is—in this case, a *set*. Second, we must state how it is to be differentiated from other objects of the same sort—in this case, by its *members*. Thus the general sort, *set*, and the associated formal relation of *membership* come together in providing an account of what a particular set is." (Fine 2005c, p. 348)

These are the central ideas of Fine's essentialism. I will elaborate them in the following.

§III.3.2. The scope of objects having an essence

The many different examples Fine gives for objects, and predicables, that have essences strongly indicate that virtually no kind of entity is in principle excluded. Among his examples of objects with essences are concrete particulars, such as Socrates, particular water molecules and artefacts, and abstract objects, such as sets, numbers and concepts (1994a, pp.6f, 9, 14). Examples of logical concepts that are capable of having an essence are universality, identity or disjunction (Fine 1995c p. 57f). Fine further speaks of particularized features such as the smile of someone (Fine 1995a p.269) and universals, such as the colour red, or complex properties, such as not being wise (Fine 1995c, p. 67) as in principle definable objects that have thus essences. These are examples of 'objectual essences' in Fine's view. An example of a 'predicational

essence' is about the concept of knowledge in its predicational form: for s knowing p it may be essential that s believes p on the basis of the truth of p (Fine 2015, p. 298f).

All these examples show that Fine is very liberal in what could, in principle, qualify as an object or entity with an essence. There are plausibly two related reasons why this is so. For one, Fine associates the question what something is with the essence of an object. Given that we can meaningfully ask of all kinds of things (concepts, tropes, particulars etc.) *what* they are, all these things can be taken to be objects in the sense of things that have essences. The second, more important reason is that Fine seems compelled by the principal explanatory aim of his essentialism (i.e. to explain the source of metaphysical necessity) to assume that all sorts of things have essences in order to account for all kinds of necessary truths in the strictest sense. Assume, for instance, that Mona Lisa's smile (at the time she was painted) has no essence. It still seems necessarily true that this smile, if it exists, is a kind of facial expression belonging to Mona Lisa. If so, contrary to Fine's objective, this necessity would not be grounded in any essence whatsoever. Fine seems for this reason, i.e. to be able to explain any kind of metaphysically necessary truth, not to exclude any kind of object from having an essence in principle. If there are, say, tropes, then tropes have essences in Fine. But note that he need not thereby assume that there are tropes.

§III.3.3. Fine's conception of real definition

Fine holds that all sorts of objects can in principle be at least partly defined. And by defining an object we specify its essence or identity. To ask what forms part of the definition of an object seems just to be another way to ask what forms part of its essence. I will address certain distinctions within Fine's conception of essence below, which will apply to his conception of real definition as well. Given that Fine distinguishes, for instance, an immediate and a mediate essence of an object O, there will correspondingly be a mediate and an immediate real definition of O. Here I want to expound how Fine motivates his conception of real definitions by drawing close parallels to word definitions (§III.3.3.1.). I will then turn to the canonical forms of essentialist claims, in Fine's original account associated with objectual essences and in

his recent sententialist account associated with predicational essences. I will also address Fine's claim that the essence of an object, and not just its definition, can be 'identified' with the set of essential properties or alternatively of 'essential propositions' (§III.3.3.2.).

§III.3.3.1. Real and word definitions, essential and analytic truths

Fine holds that it is by conceiving essence on the model of real definition that we may be able to clarify what essence is (cf. 1994a, p. 3). The suggested starting point of clarification is thus the notion of a real definition. And to clarify what a real definition is Fine draws a parallel between 'nominal definitions' or 'word definitions', as I will say,[58] and real definitions, where the former, as Fine argues, is actually a special case of the latter. Accordingly, we can define an object and thereby say *what it is* just as we define a word and thereby say *what it means*. And what a thing is, is its essence or identity. A real definition of an object O specifies the essence or identity of O. It need not, however, necessarily be individuating. Objects may also have only partial definitions (1994a, p. 1f; 1995a, p. 275). Fine further argues that there is a systematic analogy between analyticity and necessity on the one hand, and meaning and essence on the other hand, such that "…; as essence is to necessity, so is meaning to analyticity." Analyticity has its source in the meaning of terms just like (metaphysical) necessity has its source in the essence of objects. The sentence 'bachelors are unmarried men', for instance, is analytic in virtue of the meaning of the word or term 'bachelor'. And the proposition 'Socrates is human, if he exists.', for instance, is necessarily true in virtue of Socrates' essence. The upshot is that defining a word and stating the essence of an object are analogous in the sense that from the one, we can derive analytic truths or sentences true in virtue of the meaning of the term(s) involved, and from the other, we can derive essentialist truths or propositions true in virtue of the essence(s) of the object(s) involved. Given that words are a kind of object, word definitions are in fact just a special case of real definitions. To state what a word means is to state what is

[58] I speak of word definitions rather than nominal definitions to avoid unwanted associations with the 'nominal essences' in the Lockean sense (cf. §II.5.2.2).

essential to a word. The term “bachelor”, for instance, expresses the concept ‘bachelor’, and it is essential to the English word “bachelor” that it does so. The concept ‘bachelor’ is also an object and can be defined in turn. In this way, there will be word definitions that involve mediately the real definitions of the concepts they express (1994a p, 10-4).

Fine (1994a) is at pains to motivate the idea of real definitions, but he does not provide any specific criteria of what a real definition should comprise. He just states that definitions are *appropriate* specifications of essences (1994a, p. 13). Fine (2005c, p. 348) clarifies, using the example of a set, that the real definition of an object should state the general kind of that object and how that object is to be differentiated from other objects of the same sort (if possible). I will address some further specifications of Fine’s conception of essence and thus of real definition below. Note here that the analysis of concepts seems to be conceived as a special case of real definitions in Fine. For concepts, if they exist, are just a certain kind of object with essences and real definitions in Fine. The analysis of a concept would be about what the concept is, about its component concepts, but this seems to be the subject matter of a real definition as well. Note further that the assimilation of word definitions to real definitions seems to entail that analytic truths too have their source in the essences of certain things, namely words. For, if analyticity follows from the meanings of terms employed in a sentence, and if having these meanings is part of the essences of those terms, then it seems that any analytic truth has its base not just in the meaning of those terms but also in the essences of these terms. Fine interprets in this way, it seems, *de dicto* necessary truths as having an essential or *de re* basis. This is so in the case of analytic truths, but also in the case of logical truths, which have their source in the essences of logical objects according to Fine (1994a, p. 9f).

§III.3.3.2. Canonical forms of essentialist claims and essences as sets of essential propositions

§III.3.3.2.1. The original account and objectual essences

Fine considers two principal ways to express essentialist claims in his original account of definitional essentialism. One way is to apply a predicate modifier to a sentence such as 'Beulah is a cow' to derive 'Beulah is essentially a cow.' The other way is by means of a sentential modifier (where "a" names an object and "A" stands for a proposition): 'it is true in virtue of the essence of a that A'. An example would be that it is true in virtue of the essence of Socrates that Socrates is a human being. The sentential operator is represented symbolically by the indexed operator "$\Box_x$" followed by a proposition "A", which forms the basis of Fine's logic of essence (Fine 1995b). The usage rules of this relativized operator do not restrict Fine to sentences about individual objects. Rather, the operator can be relative to a particular object 'a' as well as to a group of objects which are F, i.e. the objects picked out by a predicate F that they exemplify. Thus "$\Box_F$A" states that A is true in virtue of the identity of those objects that exemplify F. F can denote a 'pure' property, like being green, or a 'rigid' property, like being identical to a_1 or a_2…or a_n (Fine 1995b, pp.241f, 244). Fine prefers the sentential approach over the predicate modifier approach for reasons of practicality, not because he takes it to be more fundamental (Fine 1995c, 53-5). In either case essences are conceived as essences of objects, i.e. of things that occupy argument places.

The meaning of this phrase 'it is true in virtue of the essence of an object O that A' is not further explained. Fine states explicitly that the notation (i.e. "$\Box_x$") should be taken to indicate an unanalysed relation between a proposition and an object (Fine 1995a, p. 273).

> "The notation should be taken to indicate an unanalyzed relation between an object and a proposition. Thus we should understand the identity or being of the object in terms of the propositions rendered true by its identity rather than the other way round." (Fine 1995a, p.273)

One way to illuminate this phrase, and Fine's essentialist operator, may be to contrast it with other cases where we also speak of something being true in virtue of something else. Consider Fine's (1994a, p. 14) example about defining a particular water molecule W in terms of its constituent atoms, say, the hydrogen atoms H_1 and H_2 and the oxygen atom O. It would then be true in virtue of the essence of W that H_1, H_2 and O share their valence electrons such that they constitute W. 'Being true in virtue of' here is about a relation between the essence of W and the proposition that H_1, H_2 and O share their valence electrons, no matter whether that proposition is actually true. From this relation we can derive a certain kind of condition on W's existence, namely that it requires that H_1, H_2 and O share their valence electrons. Compare this to other cases. We can plausibly say that it is actually true that H_1, H_2 and O share their valence electrons in virtue of the respective physical capacities of these atoms; or in virtue of the fact that these atoms have been put into proximity by a chemist. That these atoms share their valence electrons is not a requirement here for, say, the chemist's act to put those atoms into proximity. It is not essential to the chemist's act. It is a (physical) consequence of it.

There is another way to illuminate the sense of the phrase 'it is true in virtue of the essence of O that A'.

> "Thus for the purposes 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 1995a, p. 275)

Fine states here that the essence E of an object O can be 'identified' with the collection of the essential properties of O, or alternatively, with the collection of the propositions true in virtue of the essence of O – or 'essential propositions' as I will say. An essence is taken here to be a certain kind of whole, a collection or class (as in Fine 1995c, p. 56) or set. It is as such determinative of which are its component essential properties or propositions, just as a set is determinative of which are its members. A proposition A can then be said to be true in virtue of the essence E of O in the sense that A is part or member of E. If O exists, then A and all the propositions essential to O's have to be the case. This is, I think, a helpful way to illuminate Fine's peculiar phrase. It is not how

Fine explains it, and it does not answer the question, which properties or propositions are in fact part of the essence of an object.

Note here that Fine (1995a, p. 276) assumes explicitly that properties and propositions can intelligibly be said to have objects as constituents. Only then can Fine meaningfully hold, it seems, that objects are defined in terms of other objects, such as a water molecule being defined in terms of its constituent atoms, or a set in terms of its members. Fine does not elaborate on this assumption any further.

§III.3.3.2.2. The sententialist account and predicational essences

Fine (2015, pp. 298-301) has recently argued that the objectual conception of essence should be regarded as a special case of what he calls the predicational conception of essence. A predicational essence is the essence of a concept, or a property, in its predicational form, i.e. in its function as a predicate. Objectual essences can be reconceived as predicational essences as follows: instead of speaking of what it is to be a certain object O we speak of what it is for an arbitrary object to be identical to O.[59] In that way what is asked for is the essence of a predicate, namely of the form 'is identical to O'. Fine introduces a new canonical form of expressing essentialist claims about predicational essences. For instance:

(i) $BT(s,p) \leftarrow_{s,\,p} K(s, p)$

Fine speaks here of a 'sententialist account' of essence. A statement of essence consists in a connection between two sentences connected by the 'essentialist arrow' "←". The proposition expressed by the sentence on the left is essential for the proposition expressed by the sentence on the right, where the objects involved ('s', 'p') are arbitrary. (i) means that it is essential to s's knowing p ('K(s, p)') that s believes p on the basis of p's truth ('BT(s,p)'). The objectual essence of an object t would be expressed as follows:

[59] The appeal to arbitrary objects serves Fine to solve certain problems about how general claims can be adequately expressed. It is not of immediate concern here.

(ii) $\varphi(x) \leftarrow_x x=t$

(ii) means it is essential to the proposition that an arbitrary object x is identical to an object t that φ(x) (Fine 2015, p. 299f). I take it that both canonical forms of expressing essentialist claims (the original one and the recent predicational one) are in principle representative for Fine's definitional essentialism. Fine's development of the sententialist account has two motivations: first, considerations of homogeneity with his notation for grounding claims; and second, it helps to deal with specific deficiencies of his original account with respect to the essences of concepts (Fine 2015, p. 298-300).[60] It seems not to involve a principal rejection of the ideas underlying his definitional essentialism. Necessary truths will still be grounded in the essences of things on the sententialist account. It will presumably be essential to 'o is a horse', where o is an arbitrary object, that 'o is an animal'. And if so, then it is necessary for o to be a horse that o is an animal.

Note that the sententialist account with its conception of predicational essence results formally in *de dicto* and not *de re* necessary claims. Suppose Socrates is essentially and thus necessarily a man. In the sententialist account, this is expressed as it being essential (and thus necessary) for the proposition that some arbitrary object o is identical to Socrates, that o is a man. The necessity at issue here is formally about the relation between propositions or sentences, not about the way a property is predicated of a subject. Fine's sententialist account does not thereby fall into generalism about metaphysical necessity (cf. §III.2.1), however, the position that the early Fine associates with anti-essentialism. This position states that metaphysical necessity is ultimately general such that the fundamental formulation of metaphysically necessary claims need not make reference to particulars. But this is not excluded in Fine's sententialist account where particular first order logic objects such as Socrates will still be indispensable in

[60] The sort of problems motivating Fine here are for instance that the essence of the predicable 'to know' seems not to be the same as the essence of the concept of knowledge, as it is assumed in a sense in his original account. The essence of the latter arguably includes that knowledge is a concept, "…even though this has no direct bearing on the question of what it is to know." as Fine puts it (Fine 2015, p. 298).

expressing certain essential and thus necessary truths, for instance essential truths about the predicable 'being identical to Socrates'. Further, Fine seems in general to abandon the traditional association of essentialism with the formal characterisation of *de re* modal claims[61] in his sententialist account of essence (I mean besides his rejection of equating necessary and essential properties). His focus is on locating the essentialist source of necessary truths, be that in first order logic particulars or in properties or concepts qua objects or qua predicables. Fine abandons this traditional association already in his original account. His essentiality operator prefixed to a proposition '$\Box_s$A', i.e. 'it is true in virtue of the essence of the object s that A', is formally a sentential operator expressing formally a *de dicto* 'modal' sentence. Fine is effectively expressing an ontologically *de re* claim, which is about a particular object s and a condition it satisfies (expressed by a proposition here rather than a property), in the syntactic form of a *de dicto* proposition. Fine's conception of a predicational essence similarly leads syntactically to *de dicto* modal expressions, i.e. the modality is expressed by an essentialist arrow '←' that connects two propositions. The underlying ontological relation formally so expressed can be *de re*, i.e. between an object, for instance Socrates, and its properties. This would be expressed as being about what is essential for some arbitrary object o to be identical to Socrates. The ontological relation can also be *de dicto*, about the essence of a (purely) qualitative concept as predicable. This would be expressed, taking the example of knowledge, as being about what is essential for some arbitrary object o to know an arbitrary proposition p.

§III.3.4. Refined conceptions of essence, and ontological dependence

Fine (1995a, 1995c) draws a couple of conceptual distinctions about essence. Pertinent here are the distinctions between the conceptions of a constitutive and a consequential,

[61] By the formal characterisation, I mean that a *de re* modal claim is formalised such that the modal operator functions as a predicate modifier and typically ranges over free variables or individual constants in cases of simple predication. A *de dicto* modal claim is formalised such that the modal operator does not range over free variables (or individual constants in cases of simple predications) and functions as statement or sentence operator (cf. §II.2.3).

or consequentialist, essence (§III.3.4.1.) and further between the conceptions of an immediate and a mediate essence. The latter distinction is related to Fine's conception of ontological dependence that I will address here as well (§III.3.4.2.).

§III.3.4.1. Constitutive essence and consequential essence

Fine (Fine 1995a, pp.276-8, 1995c, pp. 56-61) distinguishes between a constitutive and a consequential conception of essence. The constitutive essence has only constitutively essential properties (or propositions) as parts. An essential property of an object is constitutively essential if it is not had in virtue of being a consequence of some more 'basic' essential properties of that object. Otherwise it is a consequentially essential property. The constitutive essence of an object is further characterised as being 'directly definitive' of an object, while the consequential essence is definitive only through its connection with other properties. Fine proposes two different ways to understand what it means for an essential property to be had in virtue of some other essential property. On the original characterisation in (Fine 1995a, 1995c) any property that can be derived from essential properties by means of logical operations alone will be part of the consequential essence of an object. An example given is that Socrates may be constitutionally essentially a man but he will only be consequentially essentially a man or a mountain. The latter disjunctive property is a logical derivative from the former constitutional property. Note that the consequentialist essence will include the constitutional essence on this characterisation of consequentially essential property. For any constitutively essential property will logically entail itself. This comprehensive understanding of the consequential essence of an object seems in general intended in Fine. More recently Fine (2012, p. 79) expresses this idea alternatively also in terms of 'grounding', which is about facts or propositions. A consequentialist essential proposition would be one that is at least partly grounded in another essentialist proposition. Fine seems also here to take the consequentialist essence to include the constitutive essence. The latter is constituted only of essential properties that are not partly grounded in other essential properties. I will address the notion of grounding and its relation to definitional essentialism in Fine's recent work briefly below. Fine (1995c,

p. 57) further claims that the distinction between constitutionally and consequentially essential properties "… corresponds roughly to the traditional distinction between essence and propria." This terminology belongs to the Aristotelian tradition. The Finean constitutional essence of an object O would thus roughly correspond to the Aristotelian essence of O, while the Finean consequentialist essences of O would roughly correspond to propria in Aristotle. I will address this correspondence claim in §IV.3.3.

Fine takes the conception of constitutive essence in principle to be central and more fundamental than the conception of consequential essence. He nevertheless adopts at least provisionally and for pragmatic reasons a refined consequential conception of essence. He argues in particular that it is not always clear how to distinguish whether an essential property is constitutively essential or merely derived and that it is in general difficult to decide which way of spelling out the essence of an object in terms of essential properties is the right one (cf. Fine 1995c, p. 58). However, on Fine's initial, unconstrained conception of consequential essence, all kinds of objects would be constituents of essential properties or propositions of an object as a result of logical closure. If Socrates is essentially a man, then he will also be consequentially essentially a man and such that 2=2. And he will consequentially essentially be a man or identical to Plato. Plato and the number 2 seem, however, not to be part of the nature of Socrates. They are 'extraneous' and should not be involved. The refined or constrained conception of consequential essence, that Fine adopts, aims at excluding such 'extraneous' objects from the essence of an object. Fine proposes a method he calls 'generalising out'. The idea is simply as follows. Take a proposition P(o) to be true in virtue of the essence of an object, say Socrates, and in which an object o occurs. Then take the generalised form of that proposition, P(x) where all occurrence of o are replaced by a variable x bound by a universal quantifier. If that generalised proposition is also part of the consequential essence of Socrates, then, it seems, there is nothing peculiar about that object o that justifies o's involvement in the essence of Socrates. o will thus not be included in the essence of Socrates on the basis of the proposition P(o) (but maybe on the basis of other propositions). For example, it follows logically from Socrates' being essentially a man that

i) Socrates is essentially a man or identical with Plato.

We can generalise this proposition such that:

ii) For all x, Socrates is essentially a man or identical with x.

Since (ii) will also be true, given that Socrates is essentially a man, there seems to be no special connection between Plato and Socrates' essence. Plato is therefore generalised out with respect to proposition (i). Plato could not be generalised out, however, in the proposition that {Plato} has essentially Plato as member. For, the generalisation would not be true in this case, i.e. it would not be true that for all x, {Plato} has essentially x as member. It is this refined conception of consequential essence that Fine adopts. The method of generalizing out seems applicable for investigating any given proposition and the objects occurring in it. An appeal to the idea of a constitutive essence is insofar not required. It seems for this reason that Fine comments that we need not suppose that some essential properties are more basic than others in a consequential essence (Fine 1995a, pp. 277f, 1995c, pp. 59f).

§III.3.4.2. Immediate essence, mediate essence, and ontological dependence

Another central distinction in Fine is between the concept of an immediate and a mediate essence. This distinction is closely connected to Fine's conception of ontological dependence (cf. Fine 1995a, pp. 275f, 281f; 1995c, pp. 61f). There are different conceptions of what 'ontological dependence' means in the literature. Correia (2008) distinguishes three, namely existential dependence, essential dependence and explanatory dependence. An existentially dependent object is one whose existence requires that some condition be met. An essentially dependent object is one which requires some condition in order to be the object that it is, i.e. a condition for its essence or identity. The notion of explanatory dependence points to the fact that objects exist or are what they are not only under certain conditions but because of or in virtue of these conditions (which may involve other objects). The explanation given for the existence or essence of an object is taken to be objective in contrast to being merely epistemic.

This includes that corresponding expressions such as ‘p because of q’ (in contrast to ‘p therefore q’) are truth apt and their truth is independent of epistemic states of any subjects. According to Correia, these three notions of ontological dependence partly overlap (Correia 2008, pp. 1014-24). Hence a dependence relation can, for instance, be existential and at the same time explanatory, and it can be essential and also involve existential dependence. Fine explicitly rejects an existential account of ontological dependence for reasons similar to the ones given for rejecting the existential modal account of essence (cf. (ME) in §III.2.2 above).

Fine’s conception of ontological dependence is a case of what Correia calls essential dependence. It also involves explanatory dependence in a sense, as will become clear. An object X depends ontologically on an object Y just in case Y is a constituent of a proposition or a property that is part of X’s real definition. That X ontologically depends on Y is further explained such that the essence of X depends on the essence of Y. The essence of X will then incorporate the essence of Y as a part. An example: Socrates is a constituent of the property of having Socrates as sole member. This property is essential to and part of the real definition of {Socrates}. From this it follows that {Socrates} depends ontologically on Socrates. It further follows that the essence of {Socrates} depends on the essence of Socrates in the sense that the former incorporates the latter. So, assuming that Socrates is essentially a man, it will be part of the essence of {Socrates} that it has a member that is a man. Another example, assuming that Socrates stems essentially from his mother M, Socrates will depend ontologically on M. Assuming further that M is essentially a human being, it will be essential to Socrates that he stems from a human being. Fine’s conception of ontological dependence gives rise to the concepts of an immediate and a mediate essence. A mediate essence of an object O incorporates the essence of all the objects on which O ontologically depends. The so-called immediate essence of an object O includes only what has a *direct bearing* on the essence of O, excluding what derives only from the essence of objects on which O ontologically depends. Fine draws a parallel between real and word definitions to clarify his view here:

> “…;and just as we can distinguish, in a nominal definition [i.e. word definition], between the term defined and the terms by which it is defined, so we can distinguish in a real

> definition, between the object defined and the objects by which it is defined. The notion of one object depending upon another is therefore the real counterpart of the nominal notion of one term being definable in terms of another." (Fine 1995a, p. 275)

Just as a term is defined by means of other terms, so is an object defined by means of other objects on which it depends. The parallel seems further to involve that the definition of a term includes not just the terms that figure in it, but mediately also the definitions of these terms. Note here that the distinctions between the mediate and the immediate essence of an object O and between the constitutive and the consequential essence of O characterise the essence of O in different respects and can be combined. Fine's conception of mediate essence is about dependence relations between the essences of different objects, while his conception of consequential essence is about the logical consequences (or alternatively about the ground-logical consequences) of the constitutive essence of an object. The most comprehensive combined conception is that of the consequential mediate essence of an object O, which comprises all constitutively essential properties of O and of the objects on which O depends ontologically as well as all properties that follow logically from those essential properties. The most restricted conception is that of the immediate constitutive essence of O. Note also that Fine's conceptions of mediate and immediate essence and of ontological dependence are closely related in Fine with what it means to understand an object, what it is, as I will expound and discuss it below. Before that I will turn to Fine's conception of grounding and its connection to definitional essentialism.[62]

§III.4. Essence and Ground

Fine does not make any reference to the concept of ground in his original account of definitional essentialism, a concept that he introduces only in (Fine 2001). He associated his conceptions of essence and of ground in a certain way, however, in recent papers,

[62] Fine discusses a couple of further variations of his conceptions of essence, of real definition and of ontological dependence in (1995a, c). I will not deal with them here, since they are not immediately pertinent for my comparative purpose and also not part of the basic account of Fine's definitional essentialism.

without abandoning the principal ideas of his definitional essentialism. This association of his conceptions of essence and ground rather serves to develop and clarify certain aspects of the original essentialist account, it seems, and to combine it with his theory of ground to produce a unified metaphysical theory. And it is only to this extent that I will deal with Fine's conception of ground here. I will first expound the notion of ground in outline (§III.4.1.) and then address the connections between essence and ground as Fine conceives them (§III.4.2.).

§III.4.1. Fine's conception of ground

According to Fine, The notion of ground is about a metaphysically explanatory way in which facts or, alternatively, possible facts or propositions can be connected. Fine takes ground in fact to be the ultimate form of explanation, though he also holds that talk about ground is neutral about whether a grounded fact is reducible to its grounding facts.[63] He speaks of ground as an 'explanatory relation' between true propositions, but he also argues that it can simply be conceived in terms of a sentential operator, in particular of the operator 'because', without assuming a ground to be an entity or a fact of some sort. Fine introduces the following canonical forms to express claims about grounding (where "$\rightarrow$" and "$<$" are synonymous symbols):

(G) Its being the case that S consists in nothing more than its being the case that T, U,…

or symbolically

[63] I simplify here somewhat. Fine (2012, p. 77) also speaks of a normative or a natural (physical) conception of ground, though ground in the strict sense means metaphysical ground, and that is my concern here. Fine further distinguishes between different conceptions of ground, e.g. between an immediate and a mediate conception of ground (similar to the distinction between an immediate and mediate essence) or between a weak and a strict conception of ground. It is only according to the strict conception of ground that a fact cannot ground itself, while this is possible on the weak conception.

(G') T, U, … < S

or

(G'') T, U,… → S

(G') and (G'') can both also be read as 'S is grounded in T, U…' or as 'S because of T, U,…'. S, T, U are particular sentences expressing facts. "→" means here not material implication (expressed in contrast in (Fine 2015, pp.300-2) by "⊃"). Grounding claims of the form 'A→B' seem to entail though 'A⊃B', i.e. if A fully grounds B, then if A is the case, then also B is the case. Since Fine associates ground with sufficiency conditions and not necessary conditions, the reverse material implication seems not entailed. Essentialist claims of the form 'A←B', meaning that (the fact) A is essential to (the fact) B, in contrast entail 'B⊃A'. Grounding and being essential are both conceived as forms of metaphysical explanation. The grounded fact is explained through the grounding fact(s), and the fact that has other facts essential to it is explained through these facts. Several facts T, U etc. collectively ground the fact on the right, S. They are the grounds of S and each of T, U, etc. partly grounds S. Take for example a fact of the form 'P∧Q'. This fact is grounded in the facts 'Q' and 'P'. Take the fact that the couple Jack and Jill is married. This fact consists in nothing more, or is grounded in, the fact that Jack is married to Jill. Fine holds that the grounding relation is the strictest and ultimate form of explanation, besides the kind of explanation that involves essences. Grounding is a tighter form of explanation than for instance normative or causal (physical) explanations. It is, for example, a causal explanation that a particle accelerates in virtue of being acted upon by some force. This is not a case of (metaphysical) grounding, according to Fine, because there is an 'explanatory gap' between the explanandum and the explanans. By this gap, Fine presumably refers to the Humean point that being acted upon need not necessarily be conceived as a cause of the acceleration. There is conceptual room for denying this. In contrast, that a particle accelerates in virtue of increasing its velocity over time is a case of grounding. Fine speaks of grounds as being constitutive and determinative of what is grounded, the explanandum. And the notion of ground seems to be primitive in Fine. It is clarified by

means of examples, like the ones given. According to Fine, in many cases we have intuitions about what grounds what. It is, for instance, implausible for us to hold that the complex fact that a ball is red and round grounds the simple fact that a ball is red (though the latter is a partial ground for the former). Likewise, it seems intuitively right that a compound event is grounded by the component events. The grounds explain what is grounded and the relation between them holds of metaphysical necessity (Fine 2001, 14-16, 21f; 2012, pp. 37, 39, 46).

§III.4.2. Two kinds of metaphysical explanation: ground and essence

The concepts of essence and of ground are both central to Fine's conception of metaphysics. Fine (2012, pp. 40-42)[64] distinguishes two main branches of metaphysics, what he calls "realist" or "critical metaphysics", associated with ground, and "naïve" or "pre-critical metaphysics", associated with essence. Realist metaphysics, which is not my concern here, is concerned with the question of what is real. Questions of ground are central here, though they are not without interest in naïve metaphysics, as Fine puts it. The concept of ground serves as a conceptual tool in debates about which propositions are grounded in propositions about what is real and which are not so grounded. For instance, an anti-realist about minds will hold that propositions about mental entities are about what is not real, namely minds, or grounded in such propositions about what is not real. Naïve metaphysics, the other branch of metaphysics, is concerned with the essence or identity of things, with what they are, without regard of whether these things are real or not. Fine (2015) associates the concepts of ground and essence more closely than before, as I will expound, and he does so within naïve metaphysics, without addressing questions of realist metaphysics.

[64] Fine's initial motivation to introduce the notion of ground seems to be to provide the conceptual means to settle in principle disputes between a realist and an anti-realist position about a given subject-matter, for instance about moral facts. Such a dispute, so the idea, will turn on questions of which facts are grounded and in what kind of facts and which are not grounded or not fully grounded in what is real. The relation of grounding is as such neutral, it has no realist or anti-realist import. But it serves to make the idea of a realist metaphysics intelligible where claims of what is real and what is not, and what is factual and what non-factual can be meaningfully debated (Fine 2001, pp. 16-21, 28f).

Corresponding to the two concepts, of ground and of essence, there are two kinds of metaphysical explanations or determinations according to Fine. One explains what something is and is about essence or identity. The other explains why or in virtue of what something is the case and is about truth, i.e. about what grounds a certain true proposition or fact. The notion of explanation seems obviously taken here in an objective and not in a mere epistemic sense. One explains, for example, *what* {Socrates} is by saying that it is the set with Socrates as its sole member. In contrast, one explains *why* {Socrates} exists, or why the proposition that {Socrates} exists is true, by appeal to the existence of Socrates. Fine elaborates that being a set whose sole member is Socrates is somehow *constitutive* of what {Socrates} is while Socrates' existence is somehow *constitutive* of the existence of {Socrates} (Fine 2015, pp. 296f). Note that Fine's example of a metaphysical explanation of essence here is about an objectual essence, i.e. the essence of an object. It is given in the beginning of (Fine 2015). The point of (Fine 2015) is among others to introduce the sententialist account of essence and the conception of a predicational essence. This in turn serves partly to harmonise Fine's account of ground and of essence formally. The explananda of explanations of essence and of ground are to be of the same kind. And these are facts or the truth of propositions, with a predicable as a constituent, whose essence is at issue. Fine further explains that both kinds of constitutive explanation (about essence and about ground) hold of metaphysical necessity:

> "It is perhaps hard to say in general what constitutes a constitutive explanation, but it is at least required, in any case of a constitutive explanation, that there should be a metaphysically necessary connection between explanandum and explanans. Given that singleton Socrates is essentially a set whose sole member is Socrates, then it is metaphysically necessary that the set is one whose sole member is Socrates, and given that Socrates' existence grounds the existence of singleton Socrates, it will be metaphysically necessary if Socrates exists that his singleton exists." (Fine 2015, p. 296)

Fine's claim here about metaphysical necessity is puzzling, however. For metaphysically necessary truths are characterised in Fine (e.g. 1994a, p. 9; 2002, pp. 253-5, 279) as the propositions that are true in virtue of the essences of objects. But Fine holds here that there is a metaphysically necessary connection between explanans and

explanandum in the case of grounding as well. It is not clear why this should be so, if a relation of ground is not also implicitly about an essential relation in some sense. The given example is about the metaphysically necessary connection between 'Socrates exists' and '{Socrates} exists' where the latter proposition is grounded by metaphysical necessity in the former. To explain the metaphysical necessity here we may assume that it is part of the essence of {Socrates} that it exists, if it does, because Socrates exists. Alternatively we may assume that it is part of the essence of '{Socrates} exists' that it is grounded by 'Socrates exists'.

Fine (2012) seems to have indeed such a relation between essence and ground in mind. He holds there that ground is about explaining what 'makes' something the case, while essence is about explaining what something is. The essence of a fact C, as Fine says, (or presumably of the predicable that is part of C), determines, however, also the grounds of C's being the case.

> "Thus the particular explanatory connection between the fact C and its grounds may itself be explained in terms of the nature of C.
>
> It should be noted that what explains the ground-theoretic connection is something concerning the nature of the fact that C (or what it is for C to be the case) and not of the grounding facts themselves. Thus what explains the ball's being red or green in virtue of its being red is something about the nature of what it is for the ball to be red or green (and about the nature of disjunction in particular) and not something about the nature of what it is for the ball to be red. It is the fact to be grounded that "points" to its grounds and not the grounds that point to what they may ground." (Fine 2012, p. 76)

Fine's example suggests that it is essential to the fact or proposition 'this ball is red or green' that it is grounded (or grounded if it is the case) either in 'this ball is green' or 'this ball is red' (cf. Fine 2012, pp.74-80, 2015, p. 297).[65] The metaphysical necessity of connections of ground can thus be said to derive from the essences of things. Generally

[65] Fine's account here is refined in some respects to account for problems of generality and alternative grounds. For instance, that Socrates is a man grounds that someone is a man, but the latter need not involve in its essence that Socrates is a man. It could equally well be grounded by the fact that Plato is a man. Fine deals with such problems by generalising the grounding fact, i.e. for anyone x, that x is a man grounds that someone is a man, and this generalised grounding fact will be part of the essence of the fact that someone is a man (Fine 2012, p. 74f).

expressed, the essence of a proposition C may determine certain propositions Qs as being such that if the Qs are the case then they ground that C is the case. The Qs ground C and metaphysically necessarily so, because it is essential to C that its being the case is so grounded. Applied to our example above we can say that it is true in virtue of the essence of {Socrates}, or of '{Socrates} exists' that '{Socrates} exists' is grounded in 'Socrates exists'.

So far Fine's conceptions of essence and ground are about two distinct kinds of metaphysical explanation. But they are also, according to Fine (2015), connected in a more intimate way. For, Fine conceives essence and ground, formalised adequately, as complementary forms of 'constitutively necessary' and 'constitutively sufficient' conditions (of propositions) respectively. Both essentialist and grounding claims are taken here as being about connections between propositions. Essentialist claims have the form that one proposition P is essential to another proposition Q, grounding claims that one proposition P (partly) grounds another proposition Q. Q consists here of a predicable, whose essence or grounds are at issue, complemented by arbitrary objects in the required argument position (or by individual objects). P is taken to be essential to Q in the sense that P is a constitutively necessary condition for Q. For example, it is essential and thus a constitutively necessary condition for 'o is identical to Socrates' that 'o is a human being', where o is an arbitrary object. Grounding, in contrast, is about constitutively sufficient conditions. For example, given two arbitrary sets X and Y, the fact that every member of X is a member of Y and vice versa is a constitutively sufficient condition for (and grounds the fact that) X is identical to Y (Fine 2015, pp. 306-9).

The association of Fine's essentialism with his theory of ground results in a more comprehensive metaphysical theory. Of particular interest for my comparative purposes is that essence is conceived in terms of constitutively necessary conditions of a proposition Q. Let Q be, for instance, that (some arbitrary object) o is identical to Socrates. Propositions essential to Q would in this case be constitutively necessary identity conditions in the sense of being conditions for an identity statement to be true. Further, the association of essence with ground seems pertinent to the question in what sense essences, and essential properties, can be said to be constitutive in Fine. For Fine conceives essence in terms of *constitutively* necessary conditions just as he conceives

ground in terms of *constitutively* sufficient conditions. The parallel treatment suggests that the sense of being constitutive here is the same in both cases. Hence, investigating the sense of being constitutive associated with ground would clarify also the sense in which essences are constitutive. Unfortunately, I do not have the space here to address this issue in any detail. I note it as a point for future research. This issue seems also pertinent to compare Fine's essentialism with Aristotle's doctrine of causes, as I will discuss it in §IV.2.3. What I will do here is to offer briefly one plausible way of how the relation between ground and essence and Fine's talk of essence as being constitutive may be understood.

If essence and ground are constitutive in the same sense, then it seems that the propositions Ps which are essential to a proposition Q can be conceived as 'partial' grounds of Q. That the Ps are the case would explain at least partly, though not necessarily fully, why Q is the case, if it is the case, just as partial grounds would explain it. Note here though that Fine (2012, p. 50) characterises a partial ground as being alone or in connection with other partial grounds sufficient for some proposition to be the case. On that conception there will be a partial ground only if there is also a full ground of which it is a proper or improper part. There are propositions where it is at least unclear that they have a full ground, such as that o is identical to Socrates. Let this be Q. It will be essential to Q that o is a human being. Let this be P. P will be essential to Q, but not a partial ground on Fine's conception strictly speaking, if there is no full ground of Q. It is hard to see, however, what the difference between P in our case here and a proper partial ground amounts to. Both are constitutive for some Q and both are insufficient on their own to ground Q. So we may as well hold that essential propositions are partial grounds. Note, as I have expounded above, that for Fine the essence of a proposition is determinative of which are the grounds for that proposition to be the case. This determinative role of essence is not explained by the proposed association of essences with partial grounds, though. Another issue in need of further explanation is how the notion of a constitutive essence (cf. §III.3.4.1) is related to the sense in which essence, and ground, is characterised as being constitutive in (Fine 2015). I will not investigate these points further here, but turn to the kinds of understanding associated with essence and to the role of essences for systematically classifying necessary truths in Fine's essentialism.

§III.5. Essence, Understanding and Necessity

The concept of essence is associated with understanding in Fine in different though partly related senses, it seems. I will first address Fine's conception of understanding with respect to the ontological dependence between objects and with respect to the relation between an essence and its essential components (§5.1.). I will then expound Fine's conception of the relation between essence and metaphysical necessity in more detail and briefly touch on the kind of understanding involved there (§5.2.).

§III.5.1. Understanding, ontological dependence and essential properties

Understanding and essence are associated in different ways in Fine. Fine talks of the understanding of a defined object that is conveyed by grasping the defining objects and their essences. Related to this seems to be his talk of understanding in the sense that an essence is understood in terms of its component essential properties or propositions.

> "It is this analogy with definition that makes it so natural to talk of understanding in connection with dependence. 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)

Just as a term is defined by means of other terms, so is an object defined by means of other objects on which it depends. Reference to the defining objects conveys an understanding of what the defined object is. Fine basically states for one that an object or, what amounts to the same, the essence of an object is understood through its definition. If I grasp the real definition of an object, i.e. of its essence, then I understand that object or what it is. At another point Fine says:

> "Thus we should understand the identity or being of the object in terms of the propositions rendered true by its identity rather than the other way round." (Fine 1995a, p. 273)

It seems that even though Fine expresses himself first in terms of defining objects and then in terms of essential proposition, he roughly makes the same point, namely that the definition or the parts of it (i.e. propositions, properties or objects) convey understanding of the essence of the defined object. But Fine says also something more in the first quote. He claims that the essence of an object O is understood in reference to the essences of the objects Qs that figure in the essence of O. An object O depends ontologically, as I explained it (cf. §III.3.4.2), on all the objects Qs that are constituents of the essential propositions of O. Fine's point now is that our understanding of an object comprises these relations of ontological dependence. All the propositions essential to the respective Qs are incorporated in the essence of O, they are mediately essential to O as well. A typical Finean example would be that we understand what {Socrates} is through what Socrates is, where Socrates is a constituent of a proposition immediately essential to {Socrates}, namely that Socrates is the sole member of {Socrates}. {Socrates} incorporates in its essence the essence of Socrates as mediate essence. If Socrates is essentially a human being, then understanding what {Socrates} is involves that {Socrates} is a set with a member that is a human being. Note here that essentialist understanding of what something is involves at least sometimes *a priori* sources. For, Fine holds that at least in certain cases essential truths about particular objects can be derived from an *a priori* truth together with an *a posteriori* truth. That water is a substance whose composition is H_2O is an empirical discovery. That any substance has its given composition essentially is, so the example, an *a priori* truth. From this it can be derived that water has essentially the composition H_2O (cf. Fine 2011a, pp. 10-13).

Fine's conception of understanding what an object is through relations of ontological dependence raises some questions. For one, it seems not always to make sense to hold that we understand what an object O is by reference to all the essential properties of the objects on which O depends ontologically, at least if we apply this idea also to predicables and their essences. For example, it seems essential to an arbitrary object o to be educated that o is a rational animal. And it seems essential for o to be an animal that o has the capacity to digest. Hence it will be mediately essential for o to be educated that o has the capacity to digest. From this it follows that we understand what

it is for o to be educated also by understanding that o has the capacity to digest. But this seems *prima facie* implausible.

There is a further, related question here, namely what parts of a real definition count as (defining) objects on which the defined object depends ontologically and that are relevant for understanding what the defined object is. Do predicables count as objects in this sense? Fine (1995a, p. 276) holds that propositions and properties may "…intelligibly be said to contain objects as constituents." Now, Fine does not say here that propositions have only objects as constituents, and the straightforward way to understand him here is that he accepts that concrete particulars such as Nixon can be constituents of propositions and properties. On a more liberal reading he accepts that objects in general, of first order logic such as Nixon or of higher order logic such as 'education', can be constituents of a proposition. A problem arises on both readings, because on Fine's conception of understanding, as he expounds it in (Fine 1995a, p. 275), the non-objectual constituents of the real definition, namely predicable, seem *prima facie* to be irrelevant for our understanding of what the defined object is. But this seems to be false. Our understanding of what an object is seems also to derive from the predicables that constitute the defining sentences. For we seem to understand, for instance, what a particular water molecule W is not only by understanding what the material constituents Ms, that constitute W, are. We seem to understand what W is also by understanding the way B in which the Ms are bonded. The bonding relation B, however, need not and likely does not occur in objectual form (i.e. as 'the bonding relation B') in the real definition of W, in the very proposition about how the Ms are connected. It will plausibly occur in predicational form (e.g. two water molecules each share their valence electrons with the same oxygen atom…). So it seems that our understanding derives not only from what the objects figuring in a real definition are, but also from the non-objectual constituents, the predicables, of the real definition and what they are. Fine's conception of understanding of what an object O is would be implausible if it would not involve an understanding of the predicables that figure in the real definition of O. I assume therefore that Fine's conception of understanding as he states it in (Fine 1995a, p. 275) serves only to stress the explanatory role of the objects on which a defined object O depends for our understanding of O. This does not exclude that predicables are also relevant for our understanding of O.

I will next turn to the relation between essence and necessity and also to the kind of understanding involved there.

§III.5.2. Essence, kinds of necessity and modal understanding

The principal purpose of Fine's essentialism, it seems, is to explain how metaphysical necessity is grounded in essence. In fact, the concept of essence itself is conceived as a modal notion. It is a kind of 'source-sensitive', object related necessity, so to say:

> "Essence, under the sentential construal, becomes a localized form of necessity; it is truth in virtue of the identity of some among the objects." (Fine 1995c, p.56)

The concept of essence is conceived as a refined version of the concept of metaphysical necessity. Fine compares these two concepts with sieves that have similar functions, only the concept of essence has a much finer mesh. The concept of essence is further constitutive for the subject of (naive) metaphysics, which is, in Fine's view, centrally about the essence or nature of reality and the essences of things (Fine 1994a, pp. 2f). The view that all objects as such have essences expresses the view that all objects as such are something definite and intelligibly so. Metaphysical necessity is about what cannot be otherwise, given the essence of reality and the essences of the objects in it. The theoretical role of the concept of essence in Fine to constitute the subject of metaphysics seems to connect immediately to its role to explain how metaphysical necessity is grounded.[66] I will in the following expound two ways to classify kinds of necessity according to Fine. First, necessary truths in general are classified into different

[66] The two tasks of (naive) metaphysics, as Fine characterises them in (2011a, pp. 8, 11f) are, for one, to provide a basis for *a posteriori* essential truths. And this seems to amount to providing *a priori* essentialist truths from which *a posteriori* essentialist truths can be derived. For example, that water is essentially H_2O is grounded partly in the *a priori* essential truth that a substance with a given composition has this composition essentially. The other task is to provide a basis for all *a priori* essentialist truths within metaphysics. And this seems to amount to providing an account of essentialism and of the central metaphysical concepts such as whole, part and identity. Metaphysics so conceived is only about *a priori* essential truths.

kinds with respect to their general kind of source. Metaphysically necessary truths, which have their source in the essences of things, constitute one kind here. Second, metaphysically necessary truths are further classified systematically into kinds with respect to the objects in whose essences they are grounded. This latter classification permits Fine to analyse any given metaphysically necessary truth into its essentialist grounds, and into subject matters, and thereby to gain a certain kind of understanding of that truth.

Fine (2002 pp. 253, 267f, 278-80; 2012, p. 38) advocates modal pluralism. He holds that there are three independent general sources of correspondingly three different forms of necessity in general. Metaphysical necessity has its source in the essence or identity of things, natural necessity has its source in the natural order, and normative necessity has its source in the normative order. Hence that Socrates is necessarily a human being will be a metaphysically necessary truth, for it has its source in an essence, in Socrates' essence. That a billiard ball hit by another one necessarily moves away has its source in the laws of nature. And that I must keep the promises I made would be a necessary truth that has its source in the normative order. Metaphysical necessity is taken here to be necessity in the 'strictest sense'. It is somehow intuitively stricter than natural or normative necessity according to Fine.

Besides this classification of necessity in general, Fine further classifies metaphysically necessary truths with respect to their essentialist source in certain objects or in certain kinds of objects. For instance, logically necessary truths are metaphysically necessary truths grounded in the essences of logical concepts, while mathematically necessary truths are grounded in the essences of mathematical concepts besides logical concepts. There is an implicit hierarchy here of at least certain subject matters that determines to which subject matter a truth in general belongs. A less fundamental subject matter can involve the concepts of a more fundamental one. There will be necessary truths of logic, of mathematics, of 'metaphysics' (involving its specific concepts such as part and whole or essence), and of physics and of ethics. Each general metaphysically necessary truth is assigned to a subject matter according to the concepts in whose essences that truth is grounded. There are further metaphysically necessary truths that have their sources only in the essences of certain particulars, for examples in the combined essences of Socrates and Plato, or only in the essence of

Socrates. Among the necessary truths of physics some are naturally necessary. They have their source in the natural order. Some are metaphysically necessary though, namely those grounded in the essences of physical concepts (besides concepts of more fundamental subject matters). An example for the latter would be that it is true in virtue of the essence of acceleration that an accelerating particle changes its velocity. An example of the former would be that light has the velocity in empty space that it actually has. A similar distinction will apply in the case of the necessary truths of ethics. Note that even though Fine distinguishes natural necessity from metaphysical necessity, he suggests that there are no distinctive *de re* natural necessities but only *de dicto* ones. Fine clarifies this by the following example. He assumes that two particles attract each other as a matter of natural necessity. This necessity will follow from the (*de re*) metaphysical necessity that each of these particles belongs to the kind it actually belongs to, and from the *de dicto* natural necessity that particles of these kinds attract each other. But there is no distinctive *de re* natural necessity that these particles attract each other (Fine 1994a, p.9f; 2002, pp. 255f, 261; 2011a, pp. 19-22).

Fine also speaks of absolute necessity and of metaphysically necessary truths in the sense of necessary propositions that are true in virtue of the essence or identity of all objects whatever (Fine 1994a p. 9; 1995c, p. 71 Note 7). This characterisation of absolute necessity in terms of extension (of the objects involved) seems to be an alternative to Fine's characterisation of metaphysical necessity in the sense of having metaphysical concepts as subject matter (essence, part whole etc.). Absolute necessity, extensionally characterised, is about the necessary truths that derive from the essence of any arbitrary object, regardless of its peculiarities. It is about what all objects have in common, individually, such as the property of being objects, and as a group, such as being distinct from each other. Absolute necessity will arguably involve only *a priori* truths. It will, for instance include the *a priori* truth that any substance with a given composition has this composition essentially (cf. Fine 2011a, p.11). But it will not be absolutely necessary that water is essentially H_2O if it is H_2O, even though this is an *a priori* truth. But it is a truth that concerns not any arbitrary object but only a particular kind of objects.

Definitional essentialism arguably conveys a specific kind of modal understanding, though Fine does not speak of 'modal understanding' explicitly. For any

metaphysically necessary truth can be understood in terms of its essential sources. Given that it is necessary that Socrates is a member of {Socrates}, we can investigate which essence it is, Socrates's or the one of {Socrates} that grounds the necessity here. Definitional essentialism provides a framework to analyse any metaphysically necessary truths with respect to its essentialist sources. It is centrally concerned how metaphysical necessity is grounded in the essences of things. Essences in Fine have the role of grounding metaphysical necessity. They are in this sense principles of the 'modal logical structure' of reality, so to say.

CHAPTER IV

DIFFERENCES IN EXPLANATORY PURPOSES AND THEIR CONSEQUENCES

§IV.1. Introduction

In the preceding chapters I have offered my interpretation of Aristotle's, Kripke's and Fine's essentialist theories. I have taken into account in particular what appears to be the principal motivating problem in each case in order to clarify the respective explanatory purposes. The explanatory purpose of a theory, in turn, seems to be what mainly determines the subject matter of that theory. One cannot just argue that Aristotle's, Kripke's and Fine's forms of essentialism are all essentialist theories in the same sense of 'essential' on the ground that they are concerned with essences or essential properties. It depends, for one, on whether these terms are conceived in the same way or not. But even if they are conceived in different ways, they may be conceived in closely related ways that justify a grouping of theories under the same heading. I assume here that a good way to assess the proximity of theories and their terminology is to compare their explanatory purposes. If two theories do not even aim at explaining the same thing, then they just do not share a subject matter, it seems, despite methodological or other commonalities. If they share an explanatory purpose, in contrast, they can share a subject matter, it seems, despite methodological or conceptual differences. The comparison with respect to the explanatory purposes of the three forms of essentialism seems thus to provide a substantive criterion for whether these theories should be grouped as forms of essentialism in the same sense of 'essentialism'.

The result of my preceding interpretations is that there is a clear difference between the explanatory purposes of Aristotle's essentialism on the one side and Kripke's and Fine's forms of essentialism on the other side, while the latter have a common explanatory purpose. To summarise, Aristotle's essentialism seems mainly concerned with the ontological roles of essences, of what things are as such. Aristotle tries to overcome in his essentialism the very problems that attach to Plato's conception of Forms, which play the role of essences in Plato. The central question, the 'substance question', as I have called it, is what substances are and in what sense essences are substances. In Aristotle essences in the strict sense are the essences of concrete

particulars. They are the substances, the substantial forms and natures, of these particulars, and as such innate principles and causes of the being, unity and motion of these particulars. Aristotle's essentialism aims at explaining the natural causal order where essences are causes and principles that constitute that order.

By contrast, Kripke's essentialism emerges in the context of quantified modal logic. It is concerned with what I have called the 'modality question', namely where metaphysical necessity has its place and source. His essentialism aims at answering this question by arguing that metaphysical necessity is basically a matter of *de re* necessity. It has its place in the way in which objects as such possess their properties. Essential properties are equated with necessary properties and conceived in terms of necessary identity and existence conditions. The major problem Kripke seems to face is how to respond to Quine's anti-essentialist critique that it is meaningless to attribute to a particular object any non-trivial necessary properties independently of the way in which that object is described. It seems in reaction to Quine's challenge that Kripke is so much concerned with the semantics of denoting terms. His theory of direct reference is in a sense preliminary to his essentialism. It serves to reject semantic assumptions, in particular descriptivism, underlying Quine's arguments, and it thereby provides the semantic basis for meaningful non-trivial essentialist claims.

Fine's essentialism seems primarily concerned with problems that arise from modal essentialism, as Kripke, for instance, holds it. Modal essentialism seems committed to qualifying certain properties of objects as being necessary properties, even though these properties seem intuitively not to belong to the 'essence' qua identity of these objects. Modal essentialism seems thus incapable of assigning the source of metaphysically necessary truths correctly to the identities of things. It is for that reason that Fine dismisses modal essentialism and advocates a conception of essence on the model of real definition. The essence of an object is the same as the identity of that object and it is associated, as in Aristotle, with the question what that object is. Notwithstanding Fine's rejection of modal essentialism and certain commonalities with Aristotle's essentialism, Fine's essentialism aims at explaining roughly the same thing as Kripke's modal essentialism. Fine, too, aims at explaining where metaphysical modality has its place in reality. He too argues that this place is the essences and essential properties of things, though these terms are differently conceived than in

Kripke. For Fine essences and essential properties are the source of metaphysically necessary truths, while for Kripke essential properties just are necessary properties. Fine asserts that his conception of metaphysics, of which the concept of essence is constitutive, is broadly Aristotelian, and he refers to Aristotle prominently as someone who takes a definitional approach to essentialism just like him (Fine 1994a pp. 1f; 2011a, pp. 8 Fn1, 10). But insofar as the explanatory purpose of a theory is concerned and insofar as that purpose determines the subject matter of a theory, as I think it does, it would be incorrect to characterise Fine's essentialism as Aristotelian in spirit. It would be more correct to characterise it as Kripkean in spirit, since it has basically the same explanatory aim as Kripke's essentialism.[67] Note at this occasion also that Fine explicitly rejects the assumption of Aristotelian substantial forms as unifying causes in view of modern science.[68]

[67] I agree with Klima (2002, p. 181) and Charles (2010, pp. 322-6) that Fine's essentialism differs from Aristotelian essentialism, though my reasons differ from theirs in certain points. Klima just notes that Fine fails to reconstruct the Aristotelian theoretical context, in particular its semantic theory, which would be required to recover the connection between real definition and essence. Charles points out that in Fine's essentialism the role of essence is to fix the identity of a kind or object and that Fine does not associate the question what something is with the question why something is as it is, as Aristotle does. I agree with Klima and Charles here. To be more exact, I agree that Fine does not associate essence with the question why some matter is one thing. Fine's (2015) conception of essence as *constitutively* necessary condition includes, however, arguably an explanatory or 'causal' aspect (cf. §III.4.2), though not one of a unifying cause. Charles argues that Aristotle has been misinterpreted by friends and foes alike, and the prominent friend he lists is Fine. So he seems to think that Fine is concerned, or believes himself to be, with the same subject matter as Aristotle is, and Klima does so too as I argued in the introduction of this dissertation. I disagree with them in this point. It is central in my view that the primary theoretical role of essences in Fine's essentialism is to serve as sources for metaphysical necessity, whereas this is not so in Aristotle's essentialism. That is why Fine seems to identify the essences of things with their identities in the first place. Klima and Charles seem to ignore this point and how it leads to further differences between Aristotle's essentialism and Fine's essentialism, as I argue here, for instance that certain individuative properties and properties about the material constitution are essential in Fine but not in Aristotle (cf. §IV.2.4).

[68] "But however reasonable it may have been for Aristotle to hold this view, it is not reasonable for us. For with the advance of science, we know that there is no special force or principle which binds together the different parts of the body and yet is not operative in the universe as a whole; and in the absence of any such force or principle, it is rather hard to see what ontological basis there could be for

It has been noted before by modal essentialists that Aristotle's essentialism and other 'forms of essentialism' are associated with causality. Marcus (1971, cf. Introduction to this Dissertation, Fn. 1) notes this and also arguably Kripke when he speaks of essence in the 'philosophical sense', without speaking of Aristotle in this context though (cf. §II.5.2.2). Neither Marcus nor Kripke, however, explain Aristotle's conception of essence adequately, as a substance, a unifying cause and a principle of the natural order.[69] Kripke's talk of essences in the philosophical sense is reminiscent of real essences in the Lockean sense and not of Aristotelian essences. And Marcus (1971, p. 200) seems to take all kinds of necessary causal properties or dispositions of a kind of thing as being essential to that kind, even if they are derived from causally more basic properties. Marcus holds, for instances, that gold dissolves essentially in aqua regia. This seems not to be a causally basic and definitive property of gold, but a derivative one. To be gold is not the same as to be a substance that dissolves in aqua regia. Essential properties in Aristotle, however, characterise only the essence and nature of an object. Properties that derive causally from the essence of an object are not themselves essential to that object. Marcus and Kripke seem to incorporate such essentialist theories associated with causality under their respective conceptions of essentialism. Marcus (1971, pp. 189, 197) classifies Aristotelian essentialism as one 'mode' of *modal* essentialism, since she holds that Aristotle's essentialism is concerned with 'some kind of natural necessity'. Kripke appeals to the concept of an essence in the 'philosophical sense' to explain his natural kind essentialism, which is part of his modal essentialism (cf. §II.5.2). For both Kripke and Marcus, the association of essence with causality, as in Aristotle and Locke, seems not to constitute a kind of metaphysical theory that is fundamentally different to modal essentialism. It is rather taken to be about a special kind of necessity, which is related to causality, and a form of modal essentialism.

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distinguishing between the constituency of substances and of mere heaps. Thus the idea that there is a distinctive notion of constitution, terminating in the concrete substances, is one that should be given up. However, this is not necessarily to give up the idea that there is something distinctive about the concrete substances themselves. For one can grant that something is genuinely one, without thereby granting that what makes it genuinely one is some distinctive way in which its constituents come together." (Fine 1992, p. 38)

[69] Note, though, that Marcus characterises essences in Aristotle as a special sort of dispositions that an object that has it could not fail to have. Insofar I agree with her.

The Neo-Aristotelians Oderberg (2007) and Klima (2002) have a different view on how Aristotelian essentialism and modal essentialism are related, which is nevertheless in an important sense similar to Marcus' and Kripke's view. They think (cf. Thesis Introduction) that modal essentialism is basically concerned with the same essences as the Aristotelian is. They criticise, however, that the modal essentialist approach through language is inadequate or mistaken. I disagree with Oderberg and Klima insofar as it does not seem to me that Kripke's modal essentialism, or even Fine's essentialism, are concerned with essences in the Aristotelian sense, at least not primarily. It is obviously a different concern to investigate what is metaphysically necessary than what is the substance and unifying cause of sensible particulars. I do not deny that there are close and even systematic connections between causality, in the broad Aristotelian sense of cause, and metaphysical necessity, as I argue in §IV.2.3. The scope, however, of what is essential will differ due to the different explanatory aims in Aristotle on the one hand and in Kripke and also Fine on the other, as I argue in §IV.2.4 and also in §IV.3.[70]

In the rest of this chapter I argue that from the differences in explanatory purposes between Aristotle's essentialism and Kripke's and Fine's forms of essentialism other differences between these theories can be explained. In the first section I focus on the association of essences with causes in Aristotle and of essences and essential properties with necessary identity conditions in Kripke and Fine. I will argue that there is a noteworthy commonality between the modal logical structure of reality in Kripke and Fine and the causal structure of reality, on a broad, Aristotelian conception of 'cause'. I will then explain extensional differences between the three theories, with respect to which properties count as essential, that follow at least partly from the different explanatory purposes (§IV.2). I then argue that Fine's and Aristotle's shared association of essence with real definition should not be considered to be a substantial

[70] Kripke's and Fine's essentialist theories too differ about what is essential, but here the differences derive from different ways to formalise and conceptualise the notion of essential property, not from different explanatory aims. Fine's counterexamples to modal essentialism are all about properties that do not fall under any of Kripke's explicitly held substantial essentialist theses. So Kripke could arguably not wish to accept those properties as being essential to their objects, but he has to due to his conception of essential properties as necessary properties.

one. I will do this by showing how the difference in explanatory purposes leads to different conceptions of real definition and related essentialist notions, and again to differences about what properties count as essential (§IV.3). After drawing the conclusion of my comparison so far I give an outlook of how it may need to be completed and how it may be expanded.

§IV.2. Essence as Condition in Kripke and Fine and Essence as Cause in Aristotle

While Aristotle conceives essences as being substances and thus *causes* of a sort, Kripke and Fine conceive essences and essential properties in terms of identity *conditions*. I focus here on this contrast between essences as causes and as conditions to explain differences between these theories about which properties are considered to be essential and which are not, but also to point to an interesting correlation between essential properties in Kripke and Fine and causality in Aristotle. I find it heuristically useful here to conceive identity conditions in Kripke, and also in Fine, as a special sort of truth conditions of identity (and existence) statements, as I will explain it, without thereby claiming that Kripke and Fine would endorse this conception. But it helps to clarify why Kripke's essentialism seems committed to all sorts of implausible essential properties of objects, as I argue in (§IV.2.1). It also helps to make the differences between Kripke's essentialism and Fine's essentialism with respect to which properties count as essential more salient, and also to clarify at the same time how close Fine's essentialism is to Kripke's essentialism (§IV.2.2). I then argue for a systematic though imperfect correlation between the modal logical structure in Fine and Kripke on the one side and the causal structure in Aristotle on the other side (§IV.2.3). This correlation is interesting as such and it further serves as a suitable comparative background to show a clear extensional difference about what properties count as essential in Aristotle in contrast to Kripke's and Fine's essentialism, as I will argue (§IV.2.4).

§IV.2.1. Essential properties in Kripke as necessary identity and existence conditions and a kind of truth conditions

Kripke (1971, p. 151f) conceives essential properties as properties an object has to have if it is to be this very object or, equivalently, as properties the object must have if it exists at all. Kripke formalises these conceptions:

(I) $\Box(x)\ (\neg Fx \rightarrow x \neq a)$

(E) $\Box((\exists x)(x=a) \rightarrow Fa)$[71]

In (I) essential properties are equated to necessary identity conditions. Necessarily for all things, if something does not possess the property F then it is not identical to the object 'a'. In (E) essential properties are equated with necessary existence conditions. Necessarily, if a is identical to some existent object x then a possesses F. (I) and (E) seem to state truth conditional connections that allow us to conceive necessary identity and existence conditions as a kind of kind of truth conditions, as I will elaborate in a moment. Oderberg (2007 p. 3f) draws a connection between essential properties in modal essentialism[72] (though not specifically Kripke's) and truth conditions as well. He seems thereby to assume that there are different senses of truth conditions as I do. Oderberg argues that at least for certain modal essentialists the truth conditions of a sentence such as

(S) Socrates is essentially not a number.

would be

(T) Every possible world that contains Socrates also contains the non-numberhood of Socrates.

[71] Kripke (1962, p. 90) defines the existence predicate "E(x)" as "$\exists y(x=y)$", i.e. that x exists means that there is a y that is identical with x.

[72] By modal essentialism I mean here, in Oderberg's (2007, p. 1) sense, those views that conceive essence in terms of necessity and possible world semantics.

In other words, every world where Socrates exists is such that Socrates is not a number. Oderberg concedes that (T) can be taken to be a truth condition of (S) in a sense. But he objects not only that the modal essentialist does not provide with (T) the meaning of (S), since (S) is a statement about Socrates and (T) is about possible worlds and states of affairs in them. The modal essentialist does also not explain with (T) what it is that makes it true that Socrates is not a number in any possible world. The truth condition (T), Oderberg holds, is only a consequence of Socrates' having the very essence that he has rather than a constitutive part of that essence itself. The thought seems to be that (T) is not explanatory of why it is essential to Socrates that he is not a number. Socrates' essence includes being a man, and thus being a concrete object, and this excludes being a number, an abstract object. That Socrates is a man would be an 'explanatory' truth condition of (S), it seems, and not a mere 'consequential' one. I agree with Oderberg in that (T) is a truth condition for (S) in a sense, though not an explanatory one. Relevant for me here is that a truth condition need not be the very fact literally expressed by the sentence whose truth is at issue. Not all truth conditions have to follow the model that "snow is white" is true just if snow is white. It is also a truth condition of (S) that Socrates is not a number in any possible world where he exists, or that he is neither odd nor even, or that Socrates is a man. The last one would arguably be an explanatory truth condition of (S), the former two seem to be necessary consequences of the truth of (S). The sense of truth conditions that I associated with identity and existence conditions in Kripke is this wide one, which need not follow the model of the 'snow is white' example. Take again Kripke's conception of essential property as necessary existence and identity conditions.

(I) $\Box(x)\ (\neg Fx \rightarrow x \neq a)$

(E) $\Box((\exists x)(x=a) \rightarrow Fa)$

(I) can be conceived as expressing a necessary truth conditional relation between two sentences such that for any object x it is a necessary condition for the sentence 'x is identical to a' to be true, that 'Fx' is true. Similarly, (E) can be taken to express a necessary truth conditional relation, namely that it is a necessary condition for the

sentence ‘a exists’ to be true, that ‘Fa’ is true. These truth conditional relations are expressed in the object language here, but that does not mean that (I) and (E) cannot be conceived as expressions of necessary truth conditions of identity and existence statements respectively. For any object y we can ask whether ‘y=a’ is true. And if we know that ‘Fy’ is false and hence ‘¬Fy’ true, then by the truth-conditional relation stated in (I) we can infer that ‘y≠a’ is true and ‘y=a’ false. The truth of ‘Fy’ is thus a necessary condition for the truth of ‘y=a’. Necessary identity conditions and necessary existence conditions can in this sense be conceived as truth conditions in Kripke. They are sentences whose truth is a condition for the truth of another sentence about identity or existence respectively.

Conceiving essential properties in Kripke in terms of truth conditions for identity and existence statements helps to clarify, I think, which properties count as essential in Kripke and why so. For one, Kripke advocates explicitly various essentialist theses. These include the variants of the essentiality of origin thesis and the thesis that at least certain concrete particulars, such as artefacts, have the very kind of material substrate and the shape that they actually have. What is required for properties of origin and of material constitution to be essential is that they constitute necessary identity and existence conditions. By an identity condition is not meant here the trivial fact that every object is self-identical. One could well argue that it is a brute fact that any object is identical to itself, that is the only identity condition there is. But identity conditions in Kripke are understood differently, namely, for instance as what has to be the case if it is the case that Socrates is identical to himself. Existence conditions of Socrates are likewise plausibly understood in Kripke as what has to be the case if it is the case that Socrates exists. Conceived in this way identity and existence conditions are about truth conditions of identity and existence statements. And assuming, as is plausible, that properties of origin, of material substrate and of shape constitute such truth conditions in the case of certain objects, these properties qualify as essential properties of those objects. If it is the case that this table exists then it is the case that table is made of the very hunk of wood of which it is actually made of, and necessarily so. Note further that conceiving essential properties in terms of truth conditions seems to make it more understandable why essential properties are ‘inherited’ so to say. If Socrates stems essentially from his parents, and his parents stem essentially from their respective

parents, then Socrates stems essentially from his grandparents. This seems right given that it has to be the case that Socrates' parents stem from their respective parents for it to be the case that Socrates exists.

The association of essential properties with truth conditions in Kripke also helps to explain why Kripke seems committed to accept all kinds of properties of objects as being essential, even in cases where this seems implausible. These are in particular the cases that Fine (1994a) brings up in his criticism of modal essentialism. Note here that when we talk of properties we usually mean things like being green or running. We usually do not say that it is a property of someone to be such that something else is the case. But this kind of wider conception of property seems perfectly legitimate in the context of Kripke's essentialism. And I think again that this can best be understood if we conceive essential properties in terms of truth conditions for identity and existence statements. For instance, take (E) and add some necessary truth p, such as that 2 is identical to 2:

(E*) $\Box((\exists x)(x=a)\rightarrow Fa\wedge p)$

Let 'a' be Socrates and 'F' mean 'is a man'. (E*) then states that, necessarily, if an object exists that is identical to Socrates, then Socrates is a man and 2 is identical to 2. This seems not a natural way of attributing properties to someone. This way of property attribution seems rather peculiar to modal logic and can be found already in Quine (1979a, p. 176) who takes as a possible meaning of a predication 'Gx' that 'x=x$\wedge$p' where p is supposed to be any contingent proposition. Once such cases are permitted, it seems unobjectionable to accept cases where 'a' does not even occur in the consequent of (E*). Fine seems to assume this when he says:

> "The modal account is subject to further difficulties. For consider any necessary truth; it could be a particular mathematical truth, for example, or even the conjunction of all necessary truths. Then it is necessarily the case that this truth should hold if Socrates exists. But it is not part of Socrates' essence that there be infinitely many prime numbers or that the abstract world of numbers, sets, or what have you, be just as it is."(Fine 1994a, p. 5)

The examples Fine has in mind here seem to be of the form □((∃x)(x=a)→ p) where p is any necessary truth such as '2+2=4' or that Plato is a human being (if he exists). These truths have to hold if Socrates exists, as Fine puts it, even though it is implausible that they are somehow part of Socrates essence. This is one of the implausible consequences of modal essentialism, such as Kripke's essentialism. My point here is not just that there are these implausible consequences as Fine points them out. It is rather that we understand better how these consequences follow from Kripke's essentialism, if we conceive necessary identity conditions, and thus essential properties, in Kripke in terms of truth conditions as explained above. Consider the different ways in which we can speak of necessary identity and existence conditions. We can simply ask, for instance, whether it is necessary for Socrates to exist and to be identical to Socrates, to be such that Plato is a human being. The answer seems to be no. There seems to be no connection between Socrates' existence and identity and Plato's property of being a human being. If we ask, however, whether it is necessary that if it is true that Socrates exists, then it is true that Plato is a human being if Plato exists, then the answer will be yes. But here the question is basically which truths hold at the same worlds in which it is true that Socrates exists, independent of any explanatory relations between these truths. The focus is not on Socrates as such but on the possible worlds in which Socrates exists and which truths hold there. This seems to be part of what Oderberg criticised, as I stated it above, when he says that (T) does not give the meaning of (S) because (T) is about possible worlds and states of affairs in them and not about Socrates.[73]

[73] There seem to be different ways to avoid the implausible cases of essential properties in Kripke, not just the one Fine proposes to reject the equivalence between essential property and necessary property. Kripke could in particular restrict his very wide conception of property in some way. He could for instance holds that in the case of physical objects only physical features expressible in a simple predicate count as properties. In that way it would at least not be an essential property of Socrates to be such that there are infinitely many primes and one kind of implausible properties would be avoided.

§IV.2.2. The tradition from Kripke to Fine and essence as condition and identity

I have argued that essential properties and necessary identity and existence conditions in Kripke can be understood as truth conditions of identity and existence statements in a sense. The same is basically true for Fine's essentialism, as I will argue here. Fine rejects Kripke's approach of conceiving essential properties in terms of necessary properties, but he does not reject Kripke's essentialist project as such and its explanatory purpose. Fine conceives essence in terms of identity, but Kripke does so as well implicitly, as I will argue. And both connect essential properties conceptually with necessary identity conditions, though Fine restricts which necessary identity conditions count as essential compared to Kripke. These commonalities between Kripke's and Fine's forms of essentialism derive from the fact that they share the same subject matter. They both aim at explaining metaphysical necessity and the modal logical structure of reality with their essentialism. And both differ from Aristotle's essentialism which aims at explaining the natural causal structure of reality. Compared to this difference to Aristotle's essentialism, the differences between Fine and Kripke appear rather to be methodological differences, about how to conceive best the notions of identity and identity conditions associated with essence, rather than substantial ones.

Kripke's conception of essential property is linked to the notion of necessary identity condition. The latter, in turn, is conceptually related to the notion of identity in the sense of identity across possible worlds. While Kripke is mainly concerned with the notion of essential property rather than with the notion of essence, he seems nevertheless to associate closely or even identify identity across possible worlds, at least in one passage, with a notion of essence that he does not really elaborate elsewhere:[74]

> "We need the notion of 'identity across possible worlds' as it's usually and, as I think, somewhat misleadingly called, to explicate one distinction that I want to make now. What's the difference between asking whether it's necessary that 9 is greater than 7 or whether it's necessary that the number of planets is greater than 7? Why does one show anything more about *essence* [my italics] than the other? The answer to this might be intuitively 'Well,

[74] 'Essence' is not understood here the in 'philosophical' sense, as Kripke says, with which the scientists are concerned, i.e. the internal structure of a kind of substance, cf. §II.5.2.2. That this is so is clear from the examples of numbers, which have no internal structure that (natural) scientists investigate.

> look, the number of planets might have been different from what it in fact is. It doesn't make any sense, though, to say that nine might have been different from what it in fact is.'" (N&N pp. 47f)

Kripke is about to introduce in this passage the notion of a rigid designator. The essence of the number nine is illuminated here in terms of necessary properties of the number nine referred to by its proper name "9". Kripke seems to associate here the notion of identity across possible worlds with the notion of essence, though he does not elaborate on this connection nor does he make any effort to illuminate the notion of essence as he mentions it here further. We can also draw the following analogy. The notion of essential property is equivalent to the notion of necessary identity condition in Kripke. Necessary identity conditions for being O characterise the identity across possible worlds of O. Analogically, the essential properties of O should characterise the 'essence' of O. Kripke does not say that explicitly, but that seems to be implicit in his essentialism. Neither does he explain whether an essence is understood here as an individual essence that involves non-trivial sufficiency conditions. This seems what ideally would be the case, and maybe is the case with numbers, but which need not be the case with other objects. Kripke is quite explicit in his focus on essential properties leaving the question of sufficiency properties aside (N&N, pp. 43-7).

When Fine states that the essence of an object O just is the identity of O, understood as what grounds trans-world identity facts, then he makes explicit, and refines, what is already implicit in Kripke. In Fine the essence qua identity of an object O is characterised by the essential properties of O. And these essential properties are equivalent in Fine to propositions true in virtue of the essence of O. But this is just another way of speaking of necessary identity conditions for being O, though in a refined, namely 'source-sensitive' way (cf. §III.2.2). For an object Q cannot be identical to O if it does not satisfy these conditions. If Q is identical to O, then the very same propositions that are true in virtue of the identity of O must also be true in virtue of the identity of Q. This connection between Fine's conception of essence qua identity and Kripke's essentialism is more explicit in (Fine 2015), where Fine employs the 'predicational' conception of essence. On this conception, as I explained in §III.3.3.2.2, it is a predicate of a proposition rather than an object that has an essence. We ask for

instance, what propositions are essential for the proposition that some arbitrary person knows p. The essence here is of the predicable 'knows p'. The essence of an object t ("t" names a particular object here) is expressed in terms of essential propositions about arbitrary objects. The essence of that object consists of the set of all propositions φ about an arbitrary object x whose truth is essential to the truth of the proposition that x is identical to t. This is expressed symbolically: "$\varphi(x) \leftarrow_x x=t$".[75] That the truth of a proposition φ is essential to the truth of a proposition ψ is conceived in Fine (2015, p. 306) such that φ is a constitutively necessary condition for ψ. Constitutively necessary conditions of a proposition ψ can be conceived as truth conditions for the truth of ψ in the sense I have explained above with respect to necessary identity conditions, which are a special case of the former. The term 'constitutive' marks Fine's restrictive conception of essential property in contrast to Kripke. But the underlying idea is the same.

> "Interestingly, this formulation [i.e. $\varphi(x) \leftarrow_x x=t$] forges an intimate connection between essence, or the metaphysical notion of identity, and the identity relation, or the logical notion of identity. For to specify the nature [i.e. essence or identity] of an object t is to specify what is essential to an object's being *identical to* t. Thus the use of the term 'identity' in each context is not entirely unwarranted. The present formulation is also close to the traditional formulations of essence, under which the essential properties of an object are the properties the object is required to have *to be the object that it is*. We might say that the mistake behind the standard modal formulation of essentialist claims as
>
> $$\Box\forall x[x=t \supset \varphi(x)],$$
>
> lies, not in its appeal to the identity relation, but in its interpreting the essentialist arrow '$\leftarrow$' modally, so that $\psi \leftarrow_x \varphi$ is taken to mean the same as $\Box\forall x[x=t \supset \varphi(x)]$" (Fine 2015, p. 300)

Fine explicitly states here that the difference between his account and modal essentialism is basically a difference in formulation of what it means that essential properties are properties an object is required to have to be the object that it is. The

[75] The subscript indicates the arbitrary objects that figure as arguments in the propositions in that formula.

formulation '□∀x[x=t ⊃ φ(x)]' is just the inverse of Kripke's (I) above. So the underlying intuitive idea of what essence and essential properties are is the same, but the way this idea is spelled out varies. Kripke spells it out in modal terms and in terms of material implication ('⊃'), while Fine spells it out in terms of real definition and his essentialist arrow '←'. Essential properties in Kripke can be conceived, as I argued, in terms of necessary truth conditions of an identity statement. Essence in Fine (2015) can be likewise conceived as a *constitutive* form of necessary conditions, namely again truth conditions, but not just of identity statements but of any kind of statement with a predicable as part, whose essence is at issue, and an arbitrary object as subject (cf. §III.3.3.2.2.).

> "But what the parallel brings out is a complementary treatment of essence as a constitutive form of necessary condition." (Fine 2015, p. 306)

Kripke and Fine conceive essences basically in the same way, as the identity of objects, Fine explicitly so and Kripke implicitly. Identity is in both cases associated not just with synchronic identity but trans-world identity, even though Fine does not expound his view in reference to possible worlds. The principal difference between them is that Fine rejects Kripke's approach to conceive of essential properties in terms of necessity and the material implication. Fine is concerned with the correct attribution of essential properties, or essential propositions, to objects such that all and only those properties of an object O are essential to O that have their 'source' in the identity of O. In Kripke there is nothing that guarantees this source-sensitive assignment of essential qua necessary properties to their respective objects and that is why Fine (1994a) rejects modal essentialism. In Kripke's account metaphysical necessity is not assignable to its proper source, because it conflates the notions of essential and necessary property. Fine seeks a criterion of pertinence, one that only qualifies necessary properties of an object O as essential to O that have their source specifically in the identity of O and not in some other objects. The purpose of Fine's choice to conceive essence on the model of real definition just seems to aim at implementing such a pertinence criterion. Not any necessary property of O is essential to O, but only those that are part of the real definition of O. In this way necessary properties of O are divided into those that have

their source in the identity of O and those that have their source only or at least also in the essence of another object or the combined essence of other objects (cf. §§III.2.2, 5.2). Fine's distinction between modal and definitional essentialism is thus about a difference in philosophical approach to basically the same subject matter. It is a division similar to the one between say empiric and speculative psychology. It is not a distinction about different *kinds of theory* with different subject matters in the way that psychology and sociology differ. Fine and Aristotle both associate the concept of essence with the notion of real definition. This fact alone, however, only shows that they have a methodological commonality, so to say. It does not determine whether Fine's essentialism and Aristotle's essentialism have the same subject matter. That is rather determined by the explanatory aim of a theory, which is not the same in Aristotle's essentialism and in Fine's essentialism. I will expound this more in the next section on real definitions.

§IV.2.3. A correspondence between essences as causes and essences as conditions

In Aristotle, to be the essence of an object O is to be a certain kind of cause of O's being. Essences in the strict sense, the essences of particular sensible substances, are unifying causes that explain why the matter of O constitutes O as a single entity. In Fine and implicitly in Kripke, to be an essence of an object O is to be the identity of O. The essence of O is determinative of which properties of O are essential. The essential properties of O can be conceived as being equivalent to necessary truth conditions for identity and existence statements about O in Kripke as I explained it above. They can be conceived as being equivalent to identity statements about O in Fine. Kripke and Fine differ, though, in how they delimit their conceptions of essential property. In Kripke, to be an essential property of O just is to be a necessary property of O. He does not delimit this conception any further. As a consequence any necessary condition for an identity or existence statement about an object O is equivalent to an essential property of O. Fine is more restrictive about his conception of essential property than Kripke. In Fine to be an essential property just is to be a property that is part of the real definition of O. Only *constitutively* necessary truth conditions for an identity statement about O qualify as

being equivalent to an essential property of O, not just any necessary truth condition as in Kripke.

Given these different associations of essences, with causes in Aristotle and with necessary identity conditions,[76] in Kripke and Fine, I will argue here that there seems to be a certain correlation between causes and necessary identity conditions. I assume a broad conception of cause here that includes the Aristotelian causes, apart maybe from the final cause.[77] The internal structure of natural kinds or phenomena in the sense of Lockean real essences are causes as well. They may be an extra class of cause, but I think they may also be roughly grouped with either formal causes (e.g. the structure of water or gold) or material causes (e.g. the internal structure of animals). I will in general speak of 'ontological causes' here, meaning this broad sense of cause. And I understand as 'necessary identity conditions' here not those that are equivalent to the implausible essential properties that Fine rejects as consequences of Kripke's account. I am not concerned, for instance, with Socrates' necessary property that he is such that there are infinitely many primes. Given this understanding of 'ontological cause' and 'necessary identity condition', I think that there is a kind of systematic, though imperfect correlation between what counts as an essential property of an object O in Kripke and Fine on the one side, and ontological causes of O's being and becoming on the other. The dialectical relevance of this section consists primarily in serving as a background to clarify where and why Aristotle's essentialism differs extensionally from Fine's and Kripke's essentialism with respect to which properties of an object count as essential (cf. §IV.2.4). This correlation is also interesting in itself, and raises general questions about the ontological relation between the causal structure of reality and the modal logical structure of reality, an issue that goes beyond the scope of this thesis however.

Aristotle distinguishes four kinds of causes, as I explained in §I.3.2.1-2:

> "In one way, then, that out of which a thing comes to be and which persists, is called a cause [the material cause], e.g. the bronze of the statue, […]. In another way, the form or the

[76] I ignore here necessary existence conditions and necessary conditions for statements of existence as they do not appear in Fine.

[77] I do not include here what Aristotle would consider to be accidental causes, such as that a doctor or a pale thing is the cause of a house because the builder happens to be a doctor and to be pale as well. I am only considering here the causes proper to the effect.

> archetype, i.e. the definition of the essence, and its genera, are called causes [the formal cause] […]. Again, the primary source of change or rest, e.g. the man who deliberated is a cause, the father is cause of the child, and generally what makes of what is made and what changes of what is changed [the efficient cause]. Again, in the sense of end or that for the sake of which a thing is done, e.g. health is the cause of walking about [the final cause]." (Phys 194b24-32)

The general idea is that any kind of essential property or necessary identity condition of an object O in Fine and Kripke can be assigned to a corresponding kind of ontological cause of the being or of the becoming of O. By kinds of ontological causes, I mean the formal cause, the material cause and the efficient cause. By kinds of essential properties, I mean for example essential properties of biological origin and essential sortal properties, which are usually the subject of some explicit essentialist thesis in Kripke. I think that there is such a correspondence for most essential properties, but maybe not all, as I will show.[78] Reversely, not all instances of a kind of ontological cause will correspond to an essential property in Fine and Kripke. There are for instance efficient

[78] A plausible overview of which kinds of ontological causes correspond to the different kinds of essential properties/essentialist theses:

Ontological Causes	Causes of becoming of an object	Causes of being of an object
Efficient cause	Essentiality of biological origins (parents of offspring); (Essentially being made by a particular agent)	
Formal cause		Sortal essentialism; Essential shape; Essentiality of internal structure (of elements & compounds of elements)
Material cause	Essentiality of material origins of artefacts Essentiality of biological origins (sperm/egg of fertilised egg);	Essentiality of material constituents (a water molecule consist of its actual atoms essentially; a table consists of molecules essentially); Essentiality of internal structure (of animals)

causes for the coming to be of Socrates, such as the sun's warmth, which do not count as essential properties in Kripke and Fine. Any essential property in Kripke and Fine has as a rule a corresponding ontological cause, but not vice versa. Only certain instances of ontological causes will correspond to an essential property in Fine and Kripke. This asymmetry is what I mean when I speak of an 'imperfect' systematic correspondence, besides the possibility of cases where an essential property in Kripke or Fine has no corresponding ontological cause. Let me elaborate this claim by means of concrete examples, though I will not address all cases of essential properties.

The correspondence claim seems in particular true with respect to Kripke's essentialist theses about particulars (N&N, pp. 112-5). The essentiality of origin thesis holds that Elizabeth II, for instance, stems from her actual parents essentially. It is thus a necessary condition for being identical to Elizabeth II to stem from these very parents. This condition is itself not an actual cause for the coming into being of Elizabeth II, but it is a result of a certain causal process. The events that correspond to this essential property and the equivalent necessary identity conditions involve causal relations that are part of a biological process of procreation. The parent bodies produce a sperm and an egg respectively. They are the efficient causes of the genesis of the last two. The sperm and the egg in turn are the efficient causes for the genesis of the fertilised egg and arguably at the same time the material cause out of which the fertilized egg is made. These are cases where an essential property qua necessary identity condition corresponds to a certain ontological cause. Stemming essentially from one's parents corresponds to the parents as an efficient cause of the offspring. And that a fertilized egg stems essentially from the very egg and sperm from which it actually stems corresponds to the egg and sperm as material cause of the fertilized egg.

Further, according to Kripke, the material 'substance', i.e. the substrate of which something is made is essential to it. For instance, a particular table actually made of wood would essentially be made of wood on this view. It could not have been made of ice. And further, if the particular table is constituted of molecules, then it is essentially constituted of molecules (N&N pp. 114f, 126f). The wood and the molecules are the substrate out of which the particular table is made. In Aristotle's terminology, they would be the material cause or the matter of the table, though the molecules would arguably not be equivalent to the proximate matter in Aristotle. We have again a certain

causal relation, namely that some matter constitutes an object, a particular table. And this causal relation corresponds to essential properties qua necessary identity conditions, namely that the particular table is essentially made of wood or consists of molecules. Nothing can be that very table if it has not originally the same material constitution and the table would not come into existence without it.[79] Similarly and related, the essentiality of origin of artefacts holds that, say, a table is essentially made of the very hunk of wood of which it is actually made. The hunk of wood would be the particular material cause of the table in Aristotle's terminology. Kripke also holds that being a table is essential for a particular table. If the wood, of which the table was made, had been used to make a bench, then the table would not exist. This necessary identity condition corresponds to a formal cause in Aristotle. In all these cases the essential properties qua necessary identity conditions seem to correspond to Aristotelian causes. In Fine too (e.g. 1994a, p. 14) there are examples of some objects consisting of some components essentially. A set is defined in terms of its members. A water molecule is defined in terms of its constituent atoms. These examples correspond to material causes.

Not every essential property in Fine and Kripke might correspond to an ontological causal relation though. In Fine concepts too have essences, but it is *prima facie* not clear to what ontological cause the essence of, say, a logical concept such as disjunction would correspond. And there are further cases where the correspondence seems *prima facie* unclear. Sortal essentialism is about a particular belonging to its kind essentially. Essential sortal properties seem to correspond to formal causes, which involve also the genus and species of a particular form. But there is a difference between this case and, say, the case of essentiality of origin. In the latter case, it seemed clear that the essential property of origin involves a causal relation of procreation, an efficient causation. And in Aristotle substantial forms are a kind of motive cause rather than mere shapes or archetypes. They are definite tendencies or dispositions towards a certain end. But in Kripke to say that Beulah is essentially a cow *prima facie* does not

[79] There are some finer distinctions possible here of course. The hunk of wood of which the table is made may not necessarily have the very same parts as it actually has, and the table, once created can change its constituent matter partly over time. Agreed, but this is beside my point here. My point is that essential properties about material origins or material constitution, qualified in whatever way, correspond to the material causation of the table.

say or imply anything about causality. Depending on what a natural kind is, e.g., a universal or a property, all that may be said is that there is a kind of instantiation relation or membership relation between Beulah and the kind cow. Further, specimens of natural kinds have internal structures in Kripke instead of substantial forms. And it seems that these internal structures, which are the essences in the 'philosophical' sense of natural kinds and phenomena as Kripke argues, are supposed to play part of the causal role of substantial forms, together with the laws of nature.[80] So sortal essential properties correspond to formal causes in a sense, for they are also about what kind something belongs to. But there is a question about the different causal role associated with sortal properties in Kripke and formal causes, in particular substantial forms, and their species and genera in Aristotle.

It is further *prima facie* not clear to what kinds of Aristotelian causes internal structures in Kripke correspond. The internal structure seems not just to be the matter of a concrete object but rather a certain form of the matter, though not on the macroscopic level but on a microscopic one. The internal structure of an organism presumably causes the continuous unity of that organism in accordance or together with the biological laws and more generally the laws of nature.[81] This causal role pertains to substantial forms in Aristotle. The internal structure of, say, cows and of gold further determines the physical behaviour of these kinds. In Aristotle this causal role pertains mainly to the form or formal nature, but to some extent also to the matter or material nature. Hence the internal structure essential to a natural kind arguably plays causal roles that correspond partly to formal causes, partly to material causes in Aristotle.

Note that Klima (2002) holds a view that is in a sense similar to mine about the relation between Aristotelian and modern essentialism such as Kripke's. He says:

> "Therefore the Aristotelian position that things have essences implies the modern claim that things have essential predicates in the modern sense, thereby providing the required

[80] Cf. §II.5.2.2 and the section on the decline of Aristotle's natural philosophy, subsequent to chapter I.

[81] The idea of a causally active internal structure of an object is closely connected with the assumption of laws of nature and the question arises what their role is in determining what properties are essential to an object. This is a question that I cannot address here, however.

> metaphysical underpinning for the modern claim. But the converse claim does not hold." (Klima 2002, p. 189)

Klima assumes here, and I agree, that there is a certain correspondence such that any essential property in Aristote will also qualify as an essential property in the modern sense. But Klima does not explain why modern essentialism also classifies certain properties as essential that Aristotle would not classify so. I explain this by appeal to the different explanatory aims of the respective forms of essentialism in the next section. And I point to a more general correspondence between ontological causes and essential properties in Kripke and Fine than is noted by Klima. Klima further argues that modern essentialism somehow depends on Aristotelian essentialism. I think that this view is partly inaccurate, because there are differences about which properties of an object are classified as being essential in the different forms of essentialism and not accidentally so. I further think that in order to properly evaluate the ontological relation between Kripke's modal essentialism and Fine's definitional essentialism on the one side and Aristotelian essentialism on the other side, a more general discussion about the relation between the causal structure of reality and its modal logical structure, so to say, is needed.

In sum, the examples I have given and discussed support the view that there is a systematic though imperfect correspondence between essential properties in Fine and Kripke on the one side, and ontological, Aristotelian causes on the other side. There are cases where it is not clear that there is such a correspondence, for instance about the essential properties of logical concepts. And not every efficient cause may be essential to the coming into being of an object O in Kripke and Fine. Assuming, for instance, that the sun too is an efficient cause for the coming into being of a biological organism, there will be no corresponding essential property in Kripke or Fine to that cause. And Kripke does not hold that it is essential to a particular table that it was made by the very craftsman who made it, though others entertain that idea (cf. Salmon 2005, p. 211). Notwithstanding these special cases, the correspondence between essential properties qua (constitutively) necessary identity conditions and ontological causes seems to be an (imperfectly) systematic one. It roughly holds in one direction, for as a rule any kind of essential property of particular objects in Kripke and Fine will correspond to a kind of

ontological cause, though not the reverse. And the cases where this correspondence seems inapplicable need not be counterexamples, but maybe just need further clarification. The correspondence, as far as it holds, also seems to be no coincidence. It seems, for instance, not a coincidence that the properties of origin of an object O are about efficient causes, namely the parents or the gametes of O. There seems to be an evident relation between being a cause of the being or becoming of an object O and being a (necessary) condition of the being or becoming of an object O. This seems to concord with Kripke's intuitive conception of essential properties as being about the existence and identity of an object. These are properties of O that O has to have in order to exist and to be the very object that it is. And this is so because these properties are about the peculiar causes of O's becoming and being, which is individuated by its peculiar causes. In Fine, this relation between cause and condition may ultimately be behind his close association of essence and ground and his talk of constitutive essences and of essences as 'constitutively' necessary conditions (cf. §§III.3.4.1, 4.2). I do not have the space here, however, to elaborate and discuss these thoughts further.

§IV.2.4. On why certain properties are essential in Fine & Kripke but not in Aristotle

The (imperfect) correspondence claim as I presented it serves as a suitable background to clarifying the question whether the same properties that qualify as being essential in Kripke (duly restricted) and arguably in Fine are also essential in Aristotle, or not. For the correspondence claim may give rise to the impression that Aristotle on the one side and Kripke and Fine on the other are concerned with the same subject matter, the same 'essential' properties of an object. The difference is that Aristotle conceives essential properties in terms of causes and Fine and Kripke in terms of identity conditions. These are just two different conceptual approaches that, duly understood and restricted, classify the same properties of an object as being essential. I think that this impression is mistaken. There is a principled difference in extension about which properties count as essential. I will argue for this extensional difference in the case of properties of origin and of material constitution. I will explain in each case why such properties are not essential in Aristotle, while they are essential in Kripke and arguably also in Fine. The

underlying reason for this extensional difference lies in the difference of the respective explanatory purposes. For Aristotle, it matters to distinguish the different kinds of causes. This is important for Aristotle's conception of change, where different causes are involved with different roles to explain what change is. As a consequence, it is also relevant for distinguishing the different candidates for being substances, the fundamental ontological causes and principles. In particular matter and substantial forms are two opposing candidates for being substance or for being substance in the primary sense.[82] To be an essence is to be a substance and cause, but given that there are different causes, the question arises: which kind of cause. The essence of an object O is a unifying cause in the sense in which forms are the cause why some matter constitutes a whole. It is not a cause in the sense of matter. The explanatory aim of Kripke's and Fine's forms of essentialism, in contrast, is to explain metaphysical necessity. From this aim, no interest derives to distinguish the properties of an object O according to the different kinds of causes for the being or becoming of O corresponding to these properties. It does not matter for classifying a property as essential in Kripke and Fine which kind of causal relation, if any, it corresponds to.

The material cause, the proximate matter out of which some concrete object (a compound substance) is made, is part of the explanatory definition of that object. An explanatory definition specifies the matter and the form of a concrete object. To fully understand what, for instance, a cow is, involves understanding the kind of matter that constitutes cows. Matter contributes to the nature of the compound object and it is a substance in the sense of the substrate underlying the form. Not every part of an explanatory definition, however, specifies the essence of a compound substance as I argue in §I.3.3.1. Only those parts that specify the form, the unifying cause, are part of the essence. The proximate matter is not such a part. It is rather complementary to the form, namely that which is potentially unified into a single whole. It is thus not essential to Beulah the cow, for instance, that it consists of flesh and bones etc. even if it

[82] Aristotle's ontology is not 'monistic'; it does not have one ultimate principle, but three principles that are ranked according to their importance: matter, substantial forms, and, most fundamentally, the prime mover. These, and the compound of matter and form, are all called 'substance' in a sense.

necessarily consists of this kind of matter and even if this kind of matter is part of the explanatory definition.

In Kripke and Fine, we find essential properties about origin and about material constitution that correspond to material causes in Aristotle. For instance, a particular wooden table is essentially made of wood, at least originally, given that it is essentially made from the hunk of wood from which it was actually made. A particular water molecule has its particular constituent atoms essentially. The wood and the atoms are material causes in the Aristotelian sense of their respective objects. The property of a particular wooden table to be made of wood is essential in Kripke, but not in Aristotle. And the property of the water molecule W to consist of the very atoms Ms is essential in Fine, but not in Aristotle. Note here that the reason why these properties of material constitution are essential in Kripke and Fine is that these properties individuate a particular object rather than that they are the kind of matter peculiar to the (natural) kind to which the object belongs. Kripke would not hold that tables in general are made of wood. He would arguably hold, though, that cows in general are made of flesh and bones, insofar as we cannot imagine it to be otherwise. And Fine would arguably hold that water molecules in general are essentially constituted by hydrogen and oxygen atoms, since this seems essential to being water. For Aristotle it is not essential that water molecules (or tables) consist of the kind of proximate matter of which they consist. It is further not essential for Aristotle that a particular object, say a water molecule, consists of the very particular atoms of which it actually consists. The reason why this is so, is slightly different in the two cases, though. In the former case the reason is that the kind of matter is not part of the essence, the unifying cause, though it is part of the explanatory definition. In the latter case there is an additional reason, namely that causal relations are properly conceived on the level of universals according to Aristotle. The explanatory definition of the water molecule W would state the kind of atoms that constitute W, not the particular atoms that constitute it (cf. §I.3.2.5, and also §IV.3.2.1).

Further, Kripke holds explicitly the essentiality of origin thesis with respect to biological organisms. For instance, it is essential to Achilles that he stems from Peleus, his father. Aristotle is quite concerned with relations of origin of biological organisms in his essentialism. He would not hold, though, as I will argue here, that Achilles's

property of stemming from Peleus is part of Achilles' essence. In Kripke, an essential property qua necessary identity condition explains why an object could not be otherwise in a certain respect. That Achilles stems from Peleus is, together with *a priori* reasoning, part of what explains why Achilles could not stem from, say, Ajax. In Aristotle, the fact that Achilles stems from Peleus is not an essential fact about Achilles, and it is not conceived as part of an explanation for something else. That fact is rather part of what is explained by Aristotle's essentialism. It is an explanandum, not an explanans. From Aristotle's standpoint, Achilles' generation is a kind of substantial change that requires an explanation, namely what the cause of that generation is. That cause will be the agency of Achilles's parents, including Peleus (cf. *Met* 1071a19-23). But the mere fact that Achilles stems from Peleus is not yet sufficiently explanatory of Achilles's generation. For the question is why and in virtue of what exactly is it that Peleus is a cause for Achilles's generation.

Aristotle's essentialism, in particular the identification of the essence of a biological organism with its form and nature, aims at giving that kind of explanation (cf. §I.3.2.2.). Aristotle argues for a conception of form and essence where forms and essences, in contrast to Platonic Forms, are causally active. Part of Aristotle's explanation here is the claim that it is a peculiarity of (compound) substances, meaning biological organisms, that there must always exist an actual substance beforehand that produces them. He frequently expresses this view by pointing out that man begets man (*Met* 1032a22-25, 1034b16-9). Aristotle's theory of how forms of substances, their essences, are 'transmitted' explains why Achilles stems from Peleus. It is Peleus' form and essence that produces a sperm of a certain form. In Aristotle's view, that sperm acts on the menstrual fluid of Achilles' mother, and thereby brings a form of the same species as Peleus' form into that menstrual fluid. The origination relation between Achilles and Peleus is about the process how one embodied form and essence produces another embodied form and essence. That relation is itself not part of any of these two essences. Note also that Peleus is an efficient cause of why some matter, the menstrual fluid of Achilles' mother, receives the form of a human being. What has been generated is a compound of form and matter, namely Achilles. Peleus's agency is not the efficient cause of the continuous being or the preservation of that compound substance that is Achilles. He is not the reason why Achilles is a single thing, a unity, at any moment

after Achilles' generation. But this is exactly the kind of cause that is associated with being an essence, namely to be such a unifying cause (cf. §I.3.1, §I.3.3.1). The cause of why Achilles' matter constitutes a single thing is Achilles' substantial form, his soul and nature. It is not part of the essence of a biological organism, of what it is, that the compound substance has been brought into existence by the agency of its ancestors. For that agency is not the cause of Achilles' continuous being even though it is the cause of his coming into being.

Further, causal relations in Aristotle are most exactly revealed at the level of universals and not of particulars. For instance, the sculptor or the art of sculpting in an embodied mind is the proper and exact cause for the generation of a statue. Polyclitus, who happens to be a sculptor and to possess that art, is only said to be an accidental cause of the making of the statue in Aristotle (cf. Phys 195a32-35). Likewise, the proper cause of Achilles' generation is the embodied substantial form of human being that constitutes Peleus. That it was Peleus, that very particular human being that fathered Achilles, is accidental or irrelevant for the scientific explanation of what caused the generation of a human being, which in this case happens to be Achilles. So for Aristotle, Achilles does not stem essentially, but rather accidentally, from that very particular human being, namely Peleus. He arguably stems necessarily from Peleus in Aristotle's view, though. For Aristotle the causes of each individual are different from the ones of all other individuals, including the efficient cause such as the father of an offspring (*Met* 1071a17-29).

It may be objected here that for Aristotle properties of origin can nevertheless be said to be essential in a sense. For consider, as I explained in chapter I, that in Aristotle, each particular primary substance (e.g. Nixon) has its particular substance and essence (e.g. Nixon's soul). Aristotle is pretty clear about this when he argues that universals cannot as such be substances. Substance only belongs to itself and to that of which it is a substance. What is universal is common to many particular things and thus cannot be the substance of many things on pain of making the many things one thing (cf. *Met* 1038b7-14, 1040b20-25).[83] So it seems that the essence of a particular, its substance, is

[83] Note here that Aristotle's argument that each particular object has its 'particular' essence does not aim at establishing what is unique about a particular object. (For uniqueness matter too will arguably be relevant in Aristotle.) Particularity in the sense of uniqueness is about what distinguishes one particular

not something universal, but something particular with universal aspects. If we now assume further that a particular is the particular that it is because it has the particular essence that it has, then the question about properties of origins seems to arise again. This time, however, it is about the origins of the particular essence rather than about the particular compound object. Hence, it would be claimed that it is essential to Achilles to stem from Peleus, because stemming from Peleus specifies Achilles' essence and soul. It is Peleus's agency that brought Achilles' substantial form, his soul, into his matter. This origin specifies something necessary about that particular essence. I think there is a sense in which we can talk of an essential property here, but this is not the sense of being essential that is of interest. Being essential is used here in a derivative sense that does not mark the property as being part of the essence. Take for comparison the example that an apple is said to be healthy. Being healthy here has a different sense than the sense in which an organism is said to be healthy. The latter is said to be healthy because it is in good health, the body functions properly. An apple is called healthy only derivatively, because its consumption contributes to the health of an organism. The apple is not called healthy because it is part of the health of an organism. Analogously, stemming from Peleus can be said to be essential to Achilles, because Peleus agency caused that Achilles' soul, his essence, is in his body. But this property is not essential in the sense that it is part of the essence of Achilles, just as an apple is not healthy in the sense that it is part of the health of an organism. In both cases, we call something only derivatively a certain way, in one case an apple healthy, in the other a property essential. Further, an entity is an essence in Aristotle insofar as it plays a certain ontological causal role. In Aristotle, the essence of an organism is its soul. And we may assume that we can individuate a particular soul by its origins, i.e., by the origins of the compound of which it is a part. But this does not mean that the soul, insofar as it is an essence, a principle or cause, has an origin or cause. This origin cannot characterise the soul with

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from all other particulars. Particularity in the sense in which Aristotle discusses it is connected with the notion of a '*tode ti*' and with being separate in a sense. It contrasts with universality. Aristotle's point here is that a substance and essence cannot be predicated of many things, though a substance term that names a species of substance such as 'human being' can be predicated of many things. Essence thus cannot be a universal and is thus in this sense a particular. But what further distinguishes one particular from all other particulars is not part of this debate about substance and essence.

respect to its role of being a principle, i.e., an origin, on pain of its not being a principle anymore. If a soul qua essence and origin of being had a prior origin of being, it would not be an origin itself anymore. So even if we assume that a soul, the essence of an organism, had a certain origin, it would not have this origin insofar as it is an essence and ontological principle. And the essential property of origin would not be called essential in the sense that it is part of the very essence of an object. Such 'essential' properties of origin may nevertheless still serve to individuate the essence of an object.

In conclusion, there is a clear extensional difference between Aristotle's essentialism on the one side, and Kripke's essentialism and Fine's essentialism on the other side. This difference derives from the different explanatory purposes. I argued for it against the background of the imperfectly systematic correspondence between essential properties of a particular object in Kripke and Fine and ontological causes in Aristotle. This correspondence may be taken to suggest that Kripke and Fine are concerned with the same 'essential' properties as Aristotle. They only conceive of them in terms of necessary identity conditions, while Aristotle conceives of them in terms of causes. I have argued here that this is not so. The reason is that for Aristotle not any cause of an object that corresponds to a necessary identity condition of that object is about the essence of that object. The essence is only the unifying cause of the being as opposed to the becoming of that object. In Fine and Kripke, the difference between essential properties that correspond to unifying causes and those that do not is irrelevant. What matters is only that these properties, or the corresponding causes, constitute necessary identity conditions of an object. I will next turn to the *prima facie* salient commonality between Fine's and Aristotle's essentialist theories, namely that both associate essences with real definitions, and I argue that this is not a substantive commonality.

§IV.3. Aristotle and Fine on Real Definitions

Fine (1994a, p. 2) holds that essence should be conceived on the model of real definition rather than in modal terms. He remarks that we find this definitional approach 'trumpeted' through Aristotle's metaphysical writings and gives thereby rise to the impression that his and Aristotle's forms of essentialism have an important commonality. They may differ on the level of substantial essentialist theses, but not in the general approach to essentialism, namely that essence should be understood on the model of real definition. I will argue here that this impression is deceptive. It ignores a crucial difference between Fine and Aristotle, namely that they do not endeavour to specify the same thing in a definition, and this is so due to their different explanatory purposes. As a result, this commonality between Fine's and Aristotle's forms of essentialism is not a substantial one but rather a methodological one. I will first point out the differences in contents of real definitions in Fine and in Aristotle on taxonomical definitions (§IV.3.1). I will then argue that this difference can be explained by the different explanatory purposes (§IV.3.2). I will further discuss Fine's distinction of a constitutive and a consequential essence in contrast to Aristotle's distinction between essence and propria. I will argue that these distinctions are quite dissimilar, contrary to Fine's assertion, and that this dissimilarity can again be explained in light of the respective explanatory purposes (§IV.3.3).

§IV.3.1. Different contents of real definitions in Fine and in Aristotle

§IV.3.1.1. The scope of the question, what a thing is, in Aristotle and in Fine

In Aristotle, as I have expounded in chapter I, the 'being' of an object is the substance of that object, which is (primarily)[84] the essence of that object.

[84] The substance or being of a compound substance divides into the essence as form and into matter, but in the abstract mode where the taxonomical definitions are discussed Aristotle abstracts from this division and effectively from matter.

> "And indeed the question which, both now and of old, has always been raised, and always been the subject of doubt, viz. what being is, is just the question what is substance?" (*Met* 102b3-5)

> "The word 'substance' is applied, if not in more senses, still at least to four main objects; for both the essence [τὸ τί ἦν εἶναι] and the universal and the genus are thought to be the substance of each thing, and fourthly the substratum." (*Met* 1028b33-35)

> "…, and the essence is said to be the substance of each thing." (*Met* 1031a17)

The essence is the substance of an object in one sense of substance. It is, in the abstract mode of inquiry, what an object is in itself and is specified in terms of genus and differentia:

> "For the essence is what something is;…" (*Met* 1030a2-4)

> "… since a correct definition must define a thing through its genus and its differentiae, and these belong to the order of things which are without qualification more familiar than, and prior to, the species." (Top 141b25-27)

Here, Aristotle has the definition of a species in terms of its genus and differentia in mind. It is apparent that he does not think that there are definitions of concrete particulars that involve what is particular about them. He says explicitly that there are (in the abstract mode) only definitions of what is a species of a genus (*Met* 1030a11-15) and that there are no definitions of concrete particulars as such (*Met* 1036a1-8). It is further clear that for Aristotle an adequate answer to the question, *what* some particular substance[85] is, is achieved by stating the species, the genus and the differentia (cf. Cat 2b27-36). To sum up, in Aristotle the essence of an object is its being (as opposed to being a certain way or somewhere etc.) and the substance of that object (the dyadic sense of 'substance'). It is what is asked for in the question what that object is. The question what some particular object is is adequately answered, in the abstract mode of inquiry, by stating the species, the genus and the differentia. The species cow, the genus

[85] This is the monadic sense of the word 'substance', 'Sx', as opposed to the dyadic sense 'Sxy', i.e. x is the substance of y, as I have explained it in §I.2.2.

animal and the differentia say herbivorous* (i.e. herbivorous in a special way) characterise Beulah the cow, which is a primary, particular substance, in what it is. The taxonomical definition of Beulah the cow is the same as the definition of any cow and signifies the essence of a cow, i.e. herbivorous*animal.

Consider now in contrast how Fine conceives of the notions of being and essence, namely as synonymous with the notion of identity, and how he connects this to the question of *what* something is:

> "The idea of what something is, its identity or being, is notoriously obscure; and the idea of the being of one thing depending upon that of another is doubly obscure. (Fine 1995a, p.270)

> "In general, I shall use the terms 'essence' and 'identity' (and sometimes 'nature' as well) to convey the same underlying idea." (Fine 1995c, p.69, Fn2)

In line with the conception of essence as identity Fine has a different view than Aristotle about what an adequate answer to the question what something is involves:

> "Consider the case of sets by way of illustration. In specifying what a set is, we must state two things. First, we must state what general kind of thing it is—in this case, a *set*. Second, we must state how it is to be differentiated from other objects of the same sort—in this case, by its *members*. Thus the general sort, *set*, and the associated formal relation of *membership* come together in providing an account of what a particular set is." (Fine 2005c, p. 348)

The question what a particular object is is adequately answered in Fine not only by stating its general kind(s), but also by stating what differentiates an object from other objects of the same kind. It is noteworthy that Fine's paradigm examples are sets here and in general in his essentialism. For there are reasons why the question what a particular set is appears also in natural language to aim also at what differentiates that set from all other sets. I will address the special case of sets below when I discuss the scope of the question what an object is in natural language. For the moment note that from the Aristotelian perspective, Fine conflates the question of what something is with the questions of which one something is and who someone is. The same holds true from

the perspective of natural language, even in the case of Fine's paradigm objects, namely sets, as I will argue in a moment. The 'what' question, the Aristotelian will hold, is about what kind of thing something is. The last two questions ('which one', 'who') are about individuating a particular object or a person with respect to all other objects, including in particular those of the same kind. Individuation is understood here across possible worlds (a terminology Fine himself does not use), since Fine is not interested in what happens to distinguish Socrates from Nixon in this world only, but absolutely. And it is ideally not reduced to a brute difference between two particulars. The paradigm case about the essences of sets above as well as Fine's general approach, as I have argued in §III.3.1, strongly suggests that essentialism is ideally about individual essences. Fine (1994a p. 1, 1995a p. 275) concedes, as I have also pointed out, that the real definition of a given object O may not be fully individuating and thus a partial definition. But this does not change that in the ideal case objects have individual essences, such as sets do. In other cases objects will have bare identities, i.e. they have necessary but not sufficiency properties. This is a topic that Fine does not really address.

Fine's 'conflation' now, as the Aristotelian would conceive it, of the questions what some object O is and which one among all the objects O is seems to derive from two assumptions. First, the question what some object O is aims at the essence of an object. Second the essence of an object just is the (trans-world) identity of that object. The 'identity' here includes ideally not only necessary but also sufficiency conditions for being identical to O. The essence of O thus comprises whatever is required specifically due to O's being identical with itself for any object X to be identical to O. On these assumptions it makes sense to hold that the question of what an object is addresses both the kind K to which O belongs as well as the features that distinguish O from all other objects, including other members of K. But it follows from these assumptions that the 'what' question and the 'which one across possible worlds' question aim at the very same answer, they are 'synonymous' questions, so to say. Aristotle, in contrast, is not concerned with trans-world identity and he would, as I interpret him, reject the identification of essence and trans-world identity.

§IV.3.1.2. The natural understanding of what a thing is & Fine's paradigm of sets

I think that Aristotle's conception of the question what some object O is – rather than Fine's - corresponds to our understanding of it in natural language. But the cases of sets in Fine, and also of numbers in Kripke, seem to be special in a sense, as I will argue here. Let's start with examples of ordinary, concrete objects and let's ask what they are. Suppose I ask 'What is Achilles?' and you respond 'Achilles originates from Peleus'. Properties of origin are arguably individuative of objects and part of their trans-world identity, at least if we follow Kripke.[86] The question is, however, whether this answer would be adequate in response to the question what Achilles is on our natural understanding of that question. I think that the answer is no, exactly because that kind of answer characterises who Achilles is rather than what he is. Imagine I showed you a peculiar looking small animal A and explained that A is a dog. Would you still have reason to ask me what A is? You can ask meaningfully, it seems, what a dog is if you do not know that, or what kind of dog A is, and further where A lives and why it is so small. But would it make sense to ask what that thing is once you already know that it is a dog? My point is that it seems at least controversial that stating properties of origin are adequate answers to the question what something is in natural language.

The same seems true for properties of particular material constitution. Asked what this thing called "W" under a powerful microscope is, we may answer truthfully that it is a water molecule. We can also answer that it is made of constituents A, B, C. But this answer will only be informative if we mention the *kinds* to which the constituents belong: W is made of the oxygen atom I call Otto and of the hydrogen atoms Harry and Harold. It would be uninformative to answer to the question what W is simply that it is constituted of Otto, Harry and Harold, where the person asking is unacquainted with the bearers of these names. Further, assume we know that W is a water molecule and also what water molecules are. It would again seem to make no sense to ask further what W is besides being a water molecule. Assume in contrast that we do not know which one of many water molecules W is, but that we are familiar with Otto, Harold and Harry and able to identify them. If we ask now which of the many molecules W is, it seems an informative answer to say that it is the one made of Otto,

[86] cf. §II.5.1, §IV.2.2

Harry and Harold. In addition, if we didn't know what water molecules look like, it makes sense to ask further what W is, even though we already know about its constituents. Knowledge of the particular constituents of W does not make the question what W is superfluous, while knowledge of what kind of thing W is does not make the question which one W is superfluous. The question, what W is seems thus to have a different scope than the question which object among many W is. Answering the latter question does not necessarily make the former question redundant, and answering the former question does not make the latter question redundant.

Now, note that Fine refers frequently to sets as a paradigm example to expound his essentialism. This is so in the quote above and also in (Fine 1994a, p. 4f), where the example of {Socrates}, i.e. the singleton set Socrates, is used as paradigm example to criticise modal essentialism. Fine (1995a, p. 269) gives an intuitive explanation of ontological dependence by stating that a set depends on its members. And Fine (2015, p. 296) again uses the example of {Socrates} when he introduces the distinction between essence and ground. For Kripke (2015, p. 11, N&N p. 43), numbers appear as the paradigm case of objects that have precise criteria, i.e. necessary and sufficient identity criteria across possible worlds, which are given by their position in the number series. Both cases, sets and numbers, have interesting commonalities. They are both kinds of unique particulars and of non-sensible, abstract entities. And for both, it seems, we can give clear necessary and sufficient identity conditions. Now given that we cannot perceive sets or numbers, we cannot point to them and ask what 'this thing here' is, as we can do it in the case of animals or even of colours. Hence we will have to name them, asking for instance what a particular set is. But note that when I ask what the set of planets is, I have already spelled out the kind of thing it is, namely a set. The same is true if I ask what the number 9 is, its kind is number. So on the natural understanding I just argued for, the question what the set of planets is is answered by the way we need to formulate the question itself. Imagine that we name the set of planets "Setplanets" and someone listening to my talk about Setplanets asks, what that thing Setplanets is I am talking about. Here again it makes sense to answer that Setplanets is a set. It would now make again no sense to ask further what Setplanets is, but it makes sense to ask which set it is. Likewise, if we ask what that thing '4' is, we should answer that it is a number. And then we can ask which number it is. If we ask, what the set of planets is or

what the number 9 is, then this is equivalent to asking what the human being Socrates is. The latter question suggests either that the questioner does not know what the phrase 'the human being Socrates' is supposed to mean, that it is about a particular of a certain species. We should then answer that there is a certain particular, Socrates, that belongs to the species human being. Or the questioner wishes to know more about being a human being, as if he asked, what is Socrates insofar as he is a human being and not insofar as he is say a stone mason. Then we should explain what being a human being is. Or the questioner wishes to know more about what individuates Socrates. Assuming that we know what human beings are and that we understand the meanings of the words, this seems to be the best way to interpret the question what the human being Socrates is. In this case, however, it seems more adequate to ask right away who Socrates is. And in the case of sets it would, likewise, seem to be more adequate to ask which set the set of planets is. A reason why this complexity I describe here may go unnoticed is that we can ask meaningfully what Socrates or this thing here is, and this makes us think that we should also be able to ask meaningfully and in the same way what any other object, including abstract objects such as the set of planets is. But in the latter case the very question what a set is requires us to speak of sets from the start, since sets are abstract and non-sensible objects (though we may see their members), whereas we can refer to Socrates, for instance, by physically pointing at him. The question what the set of planets is, though self-replying, is assumed to be meaningful. In order to make sense of it we can reinterpret it as the question which set the set of planets is, and that is determined by its members. In sum, the very paradigm of sets in Fine, and numbers in Kripke, seem to be special cases with respect to the question what something is in natural language. They are cases that support in the way I have outlined it here Fine's conception that the question what an object is aims at both the kind of things something belongs to and at what individuates it. To take sets as paradigms as Fine does creates the mistaken impression that the question what an object is also aims at individuating it.

Note a further interesting point here about sets, namely in relation to matter. Sets are defined in terms of their members, and the members of a set can be conceived as the matter of the set in a broad sense which accepts also that abstract objects can have matter, as Aristotle in principle does. Fine (1992, p. 37) does so explicitly with respect to the members of sets. Besides reference to an object's origins if it has any, the matter

or the material components would seem to be the best candidate for individuating an object. And Fine suggests that particular molecules as well as sets be defined in terms of their constituent parts:

> "But then why is it not equally meaningful to define a particular set in terms of its members or to define a particular molecule of water in terms of its constituent atoms?" (1994a, p. 14)

In Fine a real definition of a molecule or a set refers to the respective material components and thereby arguably individuates the molecule and the set. The particularity of a set derives from its particular members that are presupposed as being individuated, and similar in the case of molecules. The same idea can be found in Kripke, who suggests that there maybe are sufficient identity criteria for material objects in certain cases namely in terms of more 'basic' particulars that constitute an object (N&N pp. 50f).[87] I have already argued (cf. §IV.2.4, §§I.3.3.1) that for Aristotle matter is not part of the essence of a compound object and the taxonomical definition makes no reference to it. But even so, is matter not individuative in Aristotle as well in the sense in which it is plausibly individuative in Fine's examples?

> "And when we have the whole, such and such a form in this flesh and in these bones, this is Callias or Socrates; and they are different in virtue of their matter (for that is different), but the same in form; for their form is indivisible." (*Met* 1034a5-8)

This passage *prima facie* suggests that a concrete particular is individuated by its material component. But I think that matter is ultimately not individuative in Aristotle in the sense in which sets or molecules are in Fine. For one, Aristotle does not assume atomism. So there are no most basic particulars, but infinitely divisible matter out of

[87] So ideally also concrete particulars can be individuated by appeal to their components and they would thereby be assigned a fixed place among all other (possible) particulars just as sets can be individuated by their members and thereby have a fixed place in the hierarchy of sets and similar to numbers that have a fixed place in the number series. Just as we can calculate mathematical truths about numbers and set-theoretical truths about sets, so can we 'calculate' modal propositions, infer them or (dis)prove them, about concrete particulars by appeal to those propositions that are essential of these particulars in any model of the world.

which for example Callias' flesh consists. Second and more important, matter seems to be individuative because it can be perceived:

> "There are three kinds of substance – matter, which is a 'this' by being perceived (for all things that are characterized by contact and not by organic unity are matter and substrate); the nature, a 'this' and a state it moves towards; and again, thirdly, the particular substance which is composed of these two, e.g. Socrates or Callias. " (*Met* 1070a9-13)

If matter is 'characterized' by being perceived, by contact and sight etc., then this seems to be the way in which a 'certain' matter is identified and epistemologically individuated. And it is in this way also that matter individuates the compound that it constitutes. Socrates is distinct from Callias, because this here which I see and touch now is Socrates' flesh, while that there, which I now look at and touch, is Callias' flesh. There is no question here about matter being individuative ontologically in the sense of (basic) particular components that are simply presupposed to be individuated. But the latter individuative role of material components is suggested by Fine's example of sets and their 'matter', i.e. their members, which are presupposed to be individuated.

§IV.3.2. The difference about real definitions derives form the difference in explanatory aims

Taxonomical definitions in Aristotle and real definitions in Fine do not specify the same things. Aristotle specifies the essence qua substance of an object in terms of genus and differentia. Fine specifies the essence qua identity of an object in terms also of individuative features. In the following I intend to provide an explanation of how this difference derives from the difference in the respective explanatory aims.

§IV.3.2.1. Essence as unity and cause of unity in Aristotle

In Aristotle the definition specifying the essence of an object is a taxonomical definition stating the genus and the differentia of the object's species. The question I want to

address here is, why this is so. By answering this question, I also want to meet a concern some may have here, namely that the essences of compound objects are specified in explanatory definitions rather than in taxonomical definitions in Aristotle.[88] Charles (2010, pp. 319-22), for instance, argues that Aristotle does not explicitly explain the relation between taxonomical and explanatory definition. He suggests that either Aristotle discarded taxonomical definitions in favour of explanatory definitions or he regarded the latter as a new basis for taxonomical definitions. As I understand it, these two kinds of definition both concern the essence of an object, but not exactly in the same way.

Fine conceives of the question *what* some object O is as synonymous with the question *which* one among all others the object O is, and I will explain the reasons for this in the next sub-section. Aristotle in contrast conceives that question, at least in certain passages, in terms of *why* some matter constitutes some individual or a unity. The reason for this lies in Aristotle's aim to explain in his essentialism in what sense essence is substance and a cause of natural things (cf. §I.3.3.1). An essence is conceived as a cause and principle of being, unity and motion in Aristotle and supposed to explain the natural order of things, why things are and behave as they do. Aristotle argues accordingly that the question *what* some compound or concrete object O is, is equivalent to the question *why* the matter of O constitutes a unity, an individual. The case of substance is conceived in parallel to cases about natural phenomena. I.e. the question what some natural phenomenon is is equivalent to the question *why* some feature holds of some subject.

> "In all these cases [of natural phenomena and of compound wholes] it is clear that what it is and why it is are the same. What is an eclipse? Privation of light from the moon by the screening of the earth. Why is there an eclipse? or Why is the moon eclipsed? Because the light leaves it when the earth screens it." (*APo* 15-19)

[88] I have explained Aristotle's conceptions of taxonomical definition and explanatory definition and their relation in §I.2.4 and §I.3.3.1-2

The general way, Aristotle holds, to understand the question why something *is*, is to reconceive that question in terms of some substrate or potentiality and some feature or actuality that is predicated of the substrate.

> "The 'why' is always sought in this form – 'why does one thing attach to another?'. […] E.g. why does it thunder? – why is sound produced in the clouds? Thus the inquiry is about the predication of one thing of another. And why are certain things, i.e. stones and bricks, a house? Plainly we are seeking the cause. And this is the essence (to speak abstractly), which in some cases is that for the sake of which, e.g. perhaps in the case of a house or a bed, and in some cases it is the first mover; for this is also a cause. But while the efficient cause is sought in the case of genesis and destruction, the final cause is sought in the case of being also." (*Met* 1041a10-33)

We investigate why some substrate has some feature (why there is sound in the clouds) or why some matter is one individual thing of a certain kind (why are these bricks one thing, why are they a house). More abstractly, we ask for the reason A why some B holds of some C. Why does individuality or being one, for instance, hold of a given matter. The reason why is the substance and essence of the compound substance or the natural phenomenon AB. The essence is an efficient cause in the case of natural phenomena. The extinction of fire, for instance, is the essence of sound in the clouds, i.e. of thunder. It is an efficient and final cause in the case of compound substances. The essence of a human being is the human nature or soul. The explanatory definition of a concrete object O 'specifies' the essence of O, not as such but within its explanatory context. It includes also the effect, that B holds of A, e.g. that the matter of O constitutes an individual, and by stating the effect the causal role of the essence is clarified. Therefore not every part of the explanatory definition is about a part of the essence. The matter is not part of the essence, and the unity of the compound O out of its matter is the effect of the essence and not part of the essence.

Explanatory definitions apply only to compound things that have some unifying cause distinct from themselves. Things that have no matter, that are, as such, one and a unity must be defined in another way, as Aristotle explains.

> "But of the things which have no matter, either for reason or for sense, each is by its nature essentially a kind of unity, as it is essentially a kind of being – a 'this', a quality, or a quantity.

> […], and an essence is by its very nature a kind of unity as it is a kind of being. This is why none of these has any reason outside of itself for being one, nor for being a kind of being; for each is by its nature a kind of being and a kind of unity..." (*Met* 1045a36-b5)

> "Hence it is plain that in some cases what something is is immediate and a principle; and here you must suppose, or make clear in some other way [than by demonstration or explanatory definition] both that the thing exists and what it is." (*APo* 93b22f)

Aristotle states here that essence, meaning here the essence of a concrete object, its nature, is as such a kind of unity. An essence, i.e. a substantial form and nature cannot be defined in terms of an explanatory definition. For there is no matter or substrate that is part of the essence of which something is predicated. We thus cannot ask why this feature is in this substrate. It is for this reason, I think, that Aristotle says in the last quoted passage that essences, i.e. substantial forms, have to be made clear in some other way. In *APo* II.13, Aristotle seems to provide an answer to the question how to clarify the essence of an object. There he expounds a methodology 'to hunt out the items predicated in what something is'. What he in fact does is to provide a way to establish a taxonomical classification for a genus or a kind of objects. In a taxonomical definition an object is not defined in terms of a unifying cause, but in terms of genus and differentiae, i.e. in terms of sameness and difference. And this seems exactly the kind of definition that clarifies what an essence as such is, in contrast to specifying an essence in its causal role in an explanatory definition.

The initial question how the explanatory purpose in Aristotle' essentialism leads to a definition of essence in terms of genus and differentia is thereby answered in way. An explanatory definition states the reason why some compound entity is a single thing. In the case of defining essence as such or an object with respect to its essence there is no unifying cause apart from the essence, i.e. the form itself. Essences can thus only be defined taxonomically. Note here that there is no similar conception of explanatory definition of an object in Fine. Fine says that the real definition of an object O, meaning also concrete objects, defines O and thereby 'specifies' the essence of O. In Aristotle the essence is specified in two different senses. In the real definition of a concrete object O it is specified in its role as unifying cause of O. In the taxonomical definition it is specified in the sense that it is itself defined as such.

There are two more points I want to make in answer to the initial question. For one, the soul of a certain kind of organism is conceived in Aristotle as a basic capacity namely for a certain kind of self-preservation (digestion, procreation etc.), in addition also as a certain kind of perception in the case of animals and rationality in the case of human beings. Now, these basic soul capacities explain in principle the behaviour of say an animal. Given that bats have the peculiar kind of basic perceptive, motive and digestive capacities they have, they hunt flying at night by means of sonar orientation and a certain kind of prey, say butterflies. An essence or substantial form is explanatory in this way for the behaviour of an organism. But these basic capacities, I think, are also explanatory in a further sense, namely for why the matter of an organism forms an individual. Aristotle distinguishes different senses of being one. There is in particular the sense of being one in the sense of being continuous, such as a stone, and the sense of being one in the sense of being not just continuous but also a whole with a certain shape and form. And here again the natural wholes or organic unities are 'more one' than the artificial ones such as a bundle (*Met* 1052a15-28). A bat is one in the sense of an organic unity and not just because the body is continuous, the elements being kept together by mere cohesion. The organic unity of an organism is a functional one. A human body develops in certain way and once mature it maintains a certain material constitution and shape to a certain end.

> "The fittest mode, then, of treatment is to say a man has such and such parts, because the essence of man is such and such, and because they are necessary conditions of his existence or, if we cannot quite say this then the next thing to it, namely, that it is either quite impossible for a man to exist without them, or, at any rate that it is good that they should be there. And this follows: because man is such and such the process of his development is necessarily such as it is; and therefore this part is formed first, that next; and after a like fashion should we explain the generation of all other works of nature." (*PA* 640a32-37)

> "…; nature as substance including both the motor cause and the final cause. Now it is in the latter of these two senses that either the whole soul or some part of it constitutes the nature of an animal; and inasmuch as it is the presence of the soul that enables matter to constitute the animal nature, much more than it is the presence of matter which so enables the soul, the inquirer into nature is bound to treat of the soul rather than of the matter." (*PA* 641a26-31)

The matter say of Beulah are its bones and flesh etc., and they are arranged together in a certain way or shape. The reason why these materials are one is ultimately because of the soul as an end. Beulah consists of bones because this is required for having legs which in turn are functional parts for a certain motive capacity; Beulah consists of flesh because it is the suitable material for a tactile organ. There is a functional context that unifies the matter as what is required ultimately for the basic capacities that Aristotle identifies with a soul and substantial form. The organism Beulah develops and maintains itself such that it has a certain matter suitable for certain functions and arranged in a way that the soul, a capacity for self-preservation etc., exists. The soul is a final cause in this sense, and as an embodied capacity it is also an efficient cause. In a taxonomic definition an essence is stated in terms of genus and differentiae – Aristotle indeed argues that more than one differentia is required here (*PA* 644a7-11). These differentiae and the genus characterise the basic capacity that is the soul and explain thereby not only the behaviour of an organism, but also, as ends, why the matter, arranged as it is, is one, namely one in the sense of a functional unity.

One may wonder here, if essences are causes, why they are defined universally with respect to their species in terms of genus and differentiae. Why is the essence of a particular object not defined in a way that individuates it and distinguishes it from the essence of other particulars? The last question presumes already a certain notion of essence as that which is uniquely individuating an object, as it is in Fine. But in Aristotle essences do not have this specific explanatory role of individuating particular objects, but of explaining the kind of unity of the matter of an object. An essence can be, and arguably just is, identified by appeal to the compound substance of which it is the essence in Aristotle. Note also that Aristotle stresses that forms, and thus essences, are not generated, in the sense that they are and then are not (and reversely) in some matter without undergoing any process of coming into being and passing away. They thus have as such no origins by which they could be individuated apart from the compound substance. In a change such as a process of generation some form is brought into some matter. The compound is produced and has origins. The form and essence, and the substrate, are not produced: "… i.e. the essence is not produced; for this is that which is made to be in something else by art or by nature or by some capacity. But that there is a *bronze sphere* this we make." (*Met* 1033b7f). Further, Aristotle seems to hold

that causal relations are in general revealed exactly only in terms of universals. For instance, Aristotle argues that it is being a sculptor that is the exact cause of a certain statue, not Polyclitus who happens to be a sculptor (*Phys* 195a32-5). It is more exact to state the art of healing as the cause of a healing process and the ensuing health than the name of the man who healed. And it seems more exact to state the kind of essence or nature of a parent rather than its name as a cause for the offspring's coming into being, or more exactly, for the fact that the offspring has the nature and essence that it has (cf. *Met* 1032a20-b15). In the same vein, it seems, it is more exact to state the kind of substantial form, say a human soul, rather than Socrates' soul, as a cause for the unity of a certain kind of matter, rather than Socrates's matter. It is because a human soul is a certain capacity for reason, for a certain kind of perception etc. – as it is stated in the taxonomic definition – that Socrates' matter is of the kind of matter it is and is arranged in a certain way and constitutes a human being, which 'happens' to be Socrates.[89]

This is, in sum, how I think that it follows from the purpose of Aristotle's essentialism to explain how essences can be substances and causes that the essence, qua unifying cause, is defined taxonomically. I will now address the analogous question in the case of Fine's definitional essentialism.

[89] Aristotle's view is arguably also motivated by a certain conception of understanding. For any knowledge, including knowledge about particular causal relations, seems to involve universal relations. We understand say what Socrates is not just by being aware that he has a unique soul. It is rather in particular the fact that Socrates' soul is a human soul and that we already have, by induction from other particular cases, an understanding of what a human soul taken universally is. Only because we can subsume Socrates' soul under the concept of a human soul do we understand what kind of cause it is and in consequence why Socrates developed and has the body parts he has and behaves in principle as he does. That it is this very soul that is unifying this very body would be uninformative without the universal aspects of the soul and the body. For we would not know the kind of capacity that is this soul and thus what the function of the body parts is. It is because of this knowledge of universals that we also have knowledge of the particular case that is subsumable under the universal rule (cf. *Met* 1087a10-25).

§IV.3.2.2. Grounding metaphysical necessity in essence as identity in Fine

Fine's conception of being and essence as identity stems from his endeavour to ground metaphysical necessity to answer the modality question in the tradition of Kripke's essentialism and quantified modal logic.[90] Fine's approach, as I have argued, is a refinement of Kripke's. In Kripke metaphysically necessary truths are true due the essential qua necessary properties of things. An essential property is equivalent in Kripke with a necessary identity condition across possible worlds. Fine refines this approach. He holds that not any necessary property of an object O is also an essential property of O. Only those properties, or propositions, are essential to O that have their 'source' specifically in the essence of O. And each necessary truth has its specific sources in the essence of one or several objects. Fine's distinction between necessity and essentiality has two purposes. The primary purpose is to show how each metaphysically necessary truth can be assigned its peculiar sources in the essence of one or several objects. The explanandum is metaphysical necessity, and it is explained in terms of its sources in the essence of things. The secondary purpose here, which seems auxiliary to the first, is to give an account of what properties of an object are essential. By 'auxiliary' I mean here that this second purpose is not an end itself but serves to ground metaphysical necessity. Fine, in contrast to Kripke, argues that the essential properties of an object O are not equivalent with just any necessary identity conditions of O, but only of certain identity conditions of O. And to specify these essential properties further Fine introduces the definitional conception of essence. A property is essential to O just if it is part of the definition of O. Fine's conception of essence on the model of real definition has to be robust enough to ground any metaphysical necessary truth in the essences of things.

Now, the reason why Fine conceives the 'what' question as synonymous with the 'which one across possible worlds' question and 'essence' and 'being' as synonymous with 'identity' can be explained by his aim to ground metaphysical necessity. It is useful to distinguish here between an intuitive notion of metaphysical

[90] I am concerned here with metaphysically necessary truths in the sense of truths grounded in the essence of one or several objects and not just with metaphysical necessity in the sense of absolute necessity (cf. §III.5.2).

necessity and a formal notion in Fine. The formal notion of metaphysical necessity is that of the necessity of a truth that has its source in the essence of some or several objects (if these objects exist). The intuitive notion is the one that we find introduced in Kripke. A metaphysically necessary truth here is not a mere physically necessary truth or a morally necessary truth. Metaphysically necessary truths are, as Kripke puts it, necessary in the strictest sense and thus in all possible words, something that – given that it is actually so – we cannot imagine to be otherwise, as Kripke holds (N&N pp. 35, 125). Also Fine recognises explicitly that metaphysical necessity is necessity in the strictest sense, stricter somehow than natural and normative necessity (e.g. Fine 2012, p. 38). Now it is one thing to characterise a metaphysically necessary truth as one that has its source in the essences of things. It is another thing to identify the very truths that are metaphysically necessary and then to investigate their sources. For the task of identifying a truth as metaphysically necessary it seems we can employ the intuitive notion of metaphysical necessity. Once we have established or good reason to assume that a given truth is necessary in the strictest possible sense, we investigate its sources in the essences of things. Take for illustration the following example:

(N) Socrates is the sole member of {Socrates} if both exist.

(N) is arguably a necessary truth. For, according to standard views within modal set theory, as Fine (1994a, p. 4) points out, necessarily, if Socrates exists then *ipso facto* does {Socrates}. Assuming these views about modal set theory, it seems that (N) is necessary in the strictest sense. An indication for this is that we cannot imagine it not to be true without contradiction. Further, Fine (2002, pp. 1-3) distinguishes three kinds of necessary truths, metaphysically, physically and normatively necessary truths. (N) is not a physically necessary truth, nor is it a normatively necessary truth. What remains is that it is a metaphysical necessity. Since (N) seems to be, intuitively, a metaphysically necessary truth, it should have its source in the essences of certain things. This follows from Fine's formal notion of metaphysical necessity. In general, the essences of things in Fine's account must be such that they collectively can be the sources of every single necessary truth that is metaphysical on the intuitive notion, including (N). For essences to play this explanatory role they must be conceived in a broader and different sense

than Aristotelian essences. For the latter would only explain metaphysically necessary truths about specimens belonging to their kinds and having certain explanatory basic features. But truths like (N) would not be explained on the Aristotelian conception of essence, since (N) is not about what kind of thing {Socrates} is, but about which one among all sets it is. This broader explanatory task seems to be the reason why Fine conceives the essence of an object to be the same as the trans-world identity of that object. For it is true in virtue of the identity of {Socrates} that – if {Socrates} exists – no X is identical to {Socrates} if X is not a set with Socrates as its sole member. So only if we conceive essence as identity can we account also for intuitively metaphysically necessary truths such as (N). My point here is, just as with Aristotle, that the demands of the explanandum, here the truths that are necessary in the strictest sense, require that the essences of things, the explanans, are adequately conceived. Fine's conception of essence has to be strong or 'robust' enough so that all intuitively metaphysically necessary truths are grounded in the (combined) essences of things. And this explains why essence in Fine (and arguably in Kripke) is conceived as identity. Assuming now with Fine that the 'what' question asks for the essence of things, it becomes evident that the scope of that question is the same as the 'which one across possible worlds' question in Fine. To give a further example: Fine does not explicitly endorse any form of the essentiality of origin thesis. He uses examples that indicate that he is open to it though (e.g. Fine 1994a, p. 6). But consider the following plausibly necessary truth:

(N*) Elizabeth II, if she exists, stems from her actual parents.

(N*) seems to be a necessary truth in the strictest sense, if Kripke is right. We cannot imagine that Elizabeth II – given that she stemmed from her actual parents – stemmed from different parents or from no parents at all. (N*) is not a moral truth or a physical truth, even though biology is involved in the processes underlying it. If (N*), as it seems, is intuitively a metaphysical truth then it has to have its source in the essence of some object(s). And this would be the essence of Elizabeth II, given that (N*) states a necessary condition specifically for being identical to her. So if (N*) is necessary in the strictest sense then Fine would have to accept the essentiality of origin thesis about

biological organisms and in comparable cases about artefacts. (N*) may be false and Fine may thus not be committed to the essentiality of origin. But if there is a metaphysically necessary feature that individuates Elizabeth II then the necessity of this feature must be grounded in the essence of certain things, most plausibly of Elizabeth II. In general, Fine's essentialism is based on the idea that a truth can be metaphysically necessary only because there are certain essences in which it is grounded. His essentialism must thus include essentialist principles such as essentiality of origin or sortal essentialism that are strong enough such that every metaphysically necessary truth is grounded in the essences of things.

§IV.3.3. Constitutive & consequential essence in Fine and essence & propria in Aristotle

There is a further difference between Fine and Aristotle I want to address here and explain by appeal to the difference in explanatory purpose. Fine distinguishes between the constitutive essence and the consequential essence of an object O. The former is 'directly definitive' of O. The latter includes the former and also properties that follow logically from more basic essential properties and ultimately from the constitutive essence. Even though Fine holds that essence should properly be conceived as constitutive essence, he adopts a refined consequentialist conception of essence to overcome certain problems about how to distinguish constitutive from consequential essential properties (cf. Fine 1995a, p. 276, 1995c, p. 58). Note that Fine (2012, p. 79) proposes that the difference between the constitutive and the consequentialist essence may be conceived also in terms of grounding. Constitutively essential properties are those that are not partly grounded in other essential properties. Merely consequentially essential properties would then be those that are partly grounded in other essential properties, excluding any constitutively essential properties. I am concerned here mainly with the original conception of consequential essence explained in terms of logical consequence.

It is surprising that Fine is not more concerned with the problem of adequately conceiving the constitutive essence of an object. For he holds that the constitutive

essence is ultimately the source of essentialist and thus necessary truths, where all contributions of logic have been factored out (Fine 1995c, p. 57). So why does he introduce the conception of consequential essence at all if what is sought is the proper source of essentialist claims? Well, for one any problems with drawing the distinction between constitutive and consequentialist essence affects Fine's primary concern only to a limited extent. Assume that a metaphysically necessary truth T is grounded in a proposition P essential to an object O. For instance, it is essential to {Socrates} that P, where P is that Socrates is a member of {Socrates} and any two members are the same (cf. Fine 1995c, p. 58 for that example). We may not be able to determine whether P is part of the constitutive or the merely consequential essence (without the constitutive part) of {Socrates}. P is in any case, however, ultimately grounded in the essence of {Socrates}, at least in part. What remains unclear in this case is whether T has its source also in the essence of some logical concept, but Fine seems willing to accept this possible 'inaccuracy'. A more important reason why Fine introduces the notion of consequential essence is that he seems to require, for his purpose of grounding metaphysical necessity in essence, a conception of essence under logical closure. The reason is that necessary truths that have their source in the 'combined' essence of several objects must be derivable from the essences of these objects taken together. The necessary truth that Socrates is a man or a mountain, as one of Fine's examples goes, should be grounded in the essentialist truth that Socrates is a man or a mountain. But the latter will be true only in virtue of the combined essence of Socrates's essence and the essence of disjunction (Fine 1995c, pp. 57f).

> "But if these natures [of Socrates and disjunction] are propositional in form we will need to presuppose some notion of consequence in order to derive the nature of the combination from them." (Fine 1995c, p. 57)

Take another of Fine's examples:

> (D) Socrates is distinct from the Eiffel Tower (if both exist).

(D) is a metaphysically necessary truth, hence:

(D_N) Necessarily, Socrates is distinct from the Eiffel Tower (if both exist).

(D_N) needs to be grounded in an essential truth of the form of (D). Fine (1994a, p. 5) holds explicitly, however, that (D) is not essential to Socrates, since there is nothing in Socrates' essence that connects him in any special way to the Eiffel Tower. In other words, (D) is not true just in virtue of the essence of Socrates or just in virtue of the essence of the Eiffel Tower. We need to take the essences of both Socrates and the Eiffel Tower together, it seems, to derive (D) as an essential truth and thereby to ground (D_N).[91] The idea seems to be as follows. The combined constitutive essence of Socrates and the Eiffel Tower amounts to the union of the two respective sets of constitutively essential propositions. This union set will, however, not include (D). It will include, though, for instance

(1) Socrates is a human being.
(2) The Eiffel Tower is a tower.

To get from (1) and (2) to (D) as an essentialist truth we need to apply certain logical operations. Let's assume for the purpose of a reductio ad absurdum

(3) Socrates = the Eiffel Tower

By Leibniz's law of the indiscernability of identicals

(L) $\forall x \forall y(x=y \rightarrow (Fx \rightarrow Fy))$

we get the instance

[91] We may even need to include here the essence of 'distinctness', given that the relation of being distinct is involved in (D) and would have an essence in Fine's essentialism. I will ignore this further complexity in my following example though.

(4) (Socrates = the Eiffel Tower) → (Socrates is a human being → the Eiffel Tower is a human being)

Assuming (3) we then get by substitution in (1)

(5) The Eiffel Tower is a human being.

(5) is false, since being a tower is incompatible with being a human being. It is true in virtue of the essence of being a tower that whatever is a tower is an inorganic object - or equivalently: not an organic object. And it is true in virtue of the essence of being a human being that whatever is a human being is an organic object. It follows from (5) and the essence of being a human being that

(5)* The Eiffel Tower is an organic object.

And it follows from (2) and the essence of being a tower that

(2)* The Eiffel Tower is not an organic object.

(2)* and (5)* contradict each other. (2) is an essential truth. (5) is to be rejected as being false. Hence it is true (in virtue of the essence of the Eiffel Tower, of being a human being and of being a tower) that

(6) The Eiffel Tower is not a human being.

Given (1) and (6) it follows that

(7) ¬(Socrates is a human being → the Eiffel Tower is a human being)

By (7), (4) and modus tollens we get

(8) ¬(Socrates = the Eiffel Tower).

(8) contradicts (3), reductio; (8) is proven to be true. (8) is a logical consequence from the combined constitutive essence of Socrates and the Eiffel Tower and thus part of the combined *consequential* essence of Socrates and the Eiffel Tower. This combined constitutive essence includes (1), (2), and further, as part of the *mediate* constitutive essences of Socrates and the Eiffel Tower, the constitutive essences of being a human being and of being a tower.[92] In result it has been shown that

> (D_E) It is true in virtue of the (consequential) essence of Socrates and the Eiffel Tower that Socrates is distinct from the Eiffel Tower.

So by logical closure we can derive from the union of the constitutive essences of Socrates and the Eiffel Tower the very consequentially essential truth (D_E) that grounds (D_N). Fine seems thus to require logical closure of essences to ground complex metaphysically necessary truths such as (D_N) in the combined essences of several things. His assumption of a consequential essence seems thus motivated by the explanatory aim to assign the proper sources of metaphysically necessary truths in the essences of things.[93]

Compare here Aristotle's conception of essence as the definite substance of an object in the sense of a unifying cause. Aristotle's inquiry for essence starts with the question, why is it that, for instance, this matter, these bones and that blood and those sinews etc. are one thing, a human being? And the answer is, because there is a unifying cause, a human nature and soul. It would make no sense here to speak of combined essences, say of Socrates and Plato. This would imply that Socrates and Plato have the

[92] I assume here that the mediate essence of an object O also comprises the essences of predicables, such 'is a human being', and not only the essence of objects, that occur in propositions (immediately) essential to O, as Fine holds (cf. §III.3.4.2). The alternative would be to hold that, for instance, being an organic object is part of the immediate essence of Socrates. This would make no difference to my example, though.

[93] Other complex necessary truths, for instance that, necessarily, Socrates is distinct from Plato, will arguably involve different kinds of logical derivations than the one used to establish (D_E). This will be especially so on the assumption that Socrates and Plato share all their non-trivial essential properties, and that their being distinct entities amounts to a 'bare' difference.

same unifying cause and substance. And this would mean that they have the same substantial form and soul and are thus one person. They would not be distinct entities any more. In Aristotle the essence of an entity is the form and primary substance of that entity and the "… primary substance is that kind of substance which is peculiar to an individual, which does not belong to anything else;…" (*Met* 1038b9f). The notion of a combined essence makes sense in contrast in Fine who conceives essences in terms of sets of propositions with the aim to ground metaphysically necessary truths. These essential propositions are not essential because they characterise a unifying cause of an object O as in Aristotle, but the identity of O. They constitute identity conditions of O, which are a special sort of truth conditions. To combine the essences of Socrates and Plato does not imply that they have a combined unifying cause. It rather is the union of the necessary identity conditions for Socrates and for Plato (and its logical consequences). Socrates and Plato are thereby not conceived as one object. It is not part of Fine's conception of essence, and it does not follow from his explanatory aim to ground metaphysical necessity, that essences are principles that constitutes the unity of an object, as Aristotle conceives them.

Fine holds further that the constitutive essence corresponds 'roughly' to the essence in the traditional (i.e. Aristotelian) sense and the merely consequential essence corresponds 'roughly' to what are traditionally called 'propria'. This correspondence claim is, however, more misleading than helpful.[94] It holds insofar as a proprium is a feature that 'derives' in a sense from the essence of an object O and is necessarily possessed by O. Insofar does it make sense to equate the propria of an object O in the Aristotelian sense with the consequentially essential features of O in Fine's sense. For any metaphysically necessary truth that has its source in the propria of an object will have thereby its source also in the essence (in the Aristotelian sense) or Finean constitutive essence of that object. But there are clear aspects where Fine's correspondence claim fails. For one, a proprium in Aristotle is not a logical

[94] Gorman (2005, p. 287) notes that Fine's distinction between constitutive and merely consequential essence does not correspond to Aristotle's distinction between essence and propria. The relation between the latter is one of explanation, not of logical consequence as the former. I agree. He does not elaborate this point though as I do here and he does not take into account Fine's recent formulation of the distinction in terms of grounding.

consequence of some more basic essential property in the way in which a merely consequentially essential property in Fine is on his original account. A proprium F in Aristotle is a feature that does not indicate the essence of an object or a kind of object O but that can be predicated convertibly with O. F holds exclusively of O or of all and only the Os. A proprium of bodies, for instance, is to be coloured. For, all and only bodies are coloured, and being coloured is not part of the essence of body in Aristotle. But being coloured seems not to follow logically from being a body. And it seems also, reversely, not sufficient for being a proprium in Aristotle to be a logical consequence of an essential property. For example, being extended or such that 2 is not a member of {Socrates}[95] will be a consequentially essential property of bodies, which are essentially extended. But it will not be a proprium of bodies in the Aristotelian sense, since it does not apply exclusively to bodies, it also applies for instance to {Socrates}. For, it is arguably essential to {Socrates} that 2 is not among its members. It will thus be a consequentially essential property of {Socrates} to be extended or such that 2 is not a member of {Socrates}. Note that Fine's recent account can accommodate the first example. If propria are grounded in essences, then being coloured can be said to be a proprium of bodies, since that X is coloured will arguably be grounded at least partly in that X is extended. But this does not help with the other example. Being extended or such that 2 is not a member of {Socrates} will be grounded in being extended, which is arguably a constitutively essential property of bodies. It will thus be a consequentially essential property of bodies. But it will still not be a proprium in the Aristotelian sense. Further, it seems even that Fine should reject the equivalence between the Aristotelian conception of proprium and his own conception of consequentially essential property. Fine's paradigm example to argue for definitional essentialism is that Socrates is not essentially the sole member of {Socrates}, while it is essential to {Socrates} that Socrates is its sole member. Let's accept now with Fine the consequentialist conception of essence and further Aristotle's conception of proprium. Since it is an exclusive feature of Socrates to be the sole member of {Socrates}, if Socrates exists, it follows

[95] I borrow here from Koslicki (2014, p. 194) and her counterexample to Fine's method of 'generalising out'. She considers whether '{Socrates} is such that the number 2 is not a member of {Socrates}' can be generalised away from the essence of {Socrates}. It cannot, since it is not true of every x that it is not part of {Socrates}. Socrates is member of {Socrates}.

that being the sole member of {Socrates} is a proprium of Socrates. The evidence is that 'Socrates' and 'sole member of {Socrates}' are intersubstitutable. They rigidly denote the same object across possible worlds, so to say. If the traditional notion of propria corresponds to Fine's notion of consequentially essential properties, it follows that being the sole member of {Socrates} is a consequentially essential property of Socrates. But this seems to undermine Fine's own paradigm for arguing against modal essentialism, which equates essential and necessary properties. For Fine's point there is exactly that being the sole member of {Socrates} is not an essential property of Socrates at all.

It may be objected here that Fine's point against modal essentialism is only that it is not *constitutively* essential to Socrates to be the sole member of {Socrates}. He may thus allow that it is consequentially essential to him. But this is also problematic, this time because of the relations of ontological dependence that follow. An object O is ontologically dependent on another object Q according to Fine if Q is a constituent of an essential property of O.[96] Fine first points out that this should be so only if the essence of O is conceived as constitutive essence to avoid certain problems. But he then endorses a refined conception of consequential essence where these problems are taken care of by his method of 'generalizing away' (more about this in a moment). As a consequence it does not matter on that refined conception whether an object Q is a constituent of a constitutively or consequentially essential property of O. In either case, O will depend ontologically on Q. Now, {Socrates} is a constituent of a consequentially essential property of Socrates, namely of Socrates' proprium to be the sole member of {Socrates}. It follows that Socrates is ontologically dependent on {Socrates}. But this again undermines another explicit application of Fine's paradigm, this time about ontological dependence. For Fine (1995a, p. 271) motivates his critique against the so-called modal existential account of ontological dependence by arguing that on that account it would follow that Socrates depends ontologically on {Socrates}. And this is, so Fine's point goes, implausible. It may be replied here that the proprium can be 'generalised away' according to Fine's refined conception of consequential essence.[97] The idea basically is that a property or a proposition P that is an instance of a general

[96] Cf. §III.3.4.2

[97] Cf. §III.3.4.1

logical truth such as 2=2 is of ∀(x)(x=x), will be part of the essence of an object O, but only due to logical closure and thus not for the right reason. P is thus excluded from the essence of O on Fine's refined conception of consequential essence. So one may argue that there is a general logical truth, namely that ∀x(x is the sole member of {x}). That Socrates is the sole member of {Socrates} is thus an instance of that logical truth and would be essential to any object whatsoever. But note that this talk in terms of propositions should be equivalent to talk in terms of properties according to Fine. Speaking in terms of properties we can say the same as what I just put in terms of propositions, namely that any object O whatsoever is such that Socrates is the sole member of {Socrates}. This follows from the general logical truth. But what is not true is that any O is the sole member of {Socrates}. Put again in terms of propositions, what our proprium about Socrates amounts to is not that Socrates is such that Socrates is the sole member of {Socrates}, but that Socrates is such that *he* is the sole member of {Socrates}. And the latter proposition cannot be generalised away. Note that even if the proprium here could be generalised away then this would still be a problem for Fine. For he just holds that a proprium corresponds, roughly, to a consequentially essential property and it should thus be part of the consequential essence and not be generalised away. In sum it is misleading to conceive propria of an object O as 'roughly' corresponding to the consequentially essential properties of O.

The decisive difference between constitutive and consequential essence in Fine and essence and propria in Aristotle seems again due to the different explanatory aims. Fine requires essences, in particular in combination, to be logically closed in order to 'calculate' how the necessity of a metaphysically necessary truth derives from the essences of certain objects. To that end he endorses his conception of consequential essence and the idea of a combination of the essences of several objects. Aristotle requires essences to be ontological principles, causes of being, unity and motion. To that end he conceives the relations between matter and form, but also between properties in terms of potentiality and actuality. An essential property such as being rational is a certain actual capacity that gives raise to further capacities, such as to learn grammar. Bodies have surfaces and from this arises the capacity for being coloured. In general, Fine's conception of essence is sensitive to source, to which objects are involved in grounding an essential truths and which are not. Aristotle's conception of essence is

sensitive to exact causation, to what is the immediate potentiality of a given actuality. In Fine everything counts as essential to an object O that has its source in O's essence. The connection between an essential proposition and the essence it derives from may be mediated by the essences of other objects on which O depends ontologically. Assuming essentiality of origin and a literal reading of the bible, it will be essential to Prime Minister May that Adam and Eve are her ancestors, though only mediated through the essences of all her other ancestors. In Aristotle the causal sensitivity is about what is the immediate cause of something. Being educated may have its immediate cause in being rational, but not in animal. And it is essential to Socrates that he is a human being, but not that he stemmed from his actual parents. Assume that Socrates stems from sperm S and egg E. It is then arguably essential for the process of Socrates' coming into being that S melded with E, if that is the immediate exact cause of that process. But once Socrates exists, his continuous being has another immediate cause, namely his human soul. Essential properties are not inheritable' in Aristotle in the way they are in Fine, because they are the immediate causes.

Conclusion and Outlook

I have started this dissertation by arguing for a certain assumption arguably found in the literature of an ongoing essentialist tradition from Aristotle to Kripke and Fine, namely that the respective essentialist accounts are at least basically about the same subject matter. This assumption is shared also by those who argue for a clear distinction between Aristotelian and modal essentialism. I have questioned this assumption here by arguing that Aristotle's essentialism has a significantly different explanatory aim than both Kripke's and Fine's forms of essentialism. The last two are concerned with explaining the place or source of metaphysical necessity by appeal to the essences qua identity of things. Questions about essence serve to answer questions about metaphysical necessity. The theoretical role of essences and essential properties is to be principles of the modal logical structure of reality. This structure gets into focus in the context of quantified modal logic as the very structure that is to be represented by modal logical calculi. Both Kripke (e.g. 1963) and Fine (1995b, 2000) in fact provide respective logical systems and semantics. Aristotle in contrast is concerned with explaining in what sense essences are substances and causes of things. Questions about essence serve to answer ontological questions about what grounds the being, unity and the orderly motion and change of things. The theoretical role of essences in the strict sense is to be substances and causal principles of the natural order. In Aristotle the question arises what kind of causes essences are, in particular whether they are associated with forms or with matter. In Kripke and Fine such causal distinctions have no relevance, since (constitutively) necessary identity conditions seem to comprise both material and formal causes of the being of at least certain objects and in addition also efficient causes of the coming into being of physical objects.

I have further argued that from the difference in explanatory purpose other differences can be explained. I have done this in particular with respect to the different conceptions of real definition in Aristotle and Fine; and with respect to the different extensions of which properties are considered to be essential in Fine and Kripke on the one hand and in Aristotle on the other. I have argued also that properties of particular objects considered to be essential in Kripke and Fine correspond systematically to different kinds of Aristotelian causes.

The overall comparative question of my dissertation was, whether there is a difference in subject matter between the different essentialist theories. And I have argued in support of the claim that there is a significant difference in subject matter between Aristotle's essentialism and Kripke's and Fine's essentialist theories. This is not just a difference in approach to basically the same subject matter or a difference between theories concerned with different sub-disciplines of the same subject matter (in the way that natural necessity and necessity of individuative properties both belong to the overall subject matter of necessity). My claim is primarily supported by my arguments for a difference in explanatory purposes. The plausibility of that claim depends in part on the pervasive role of the explanatory purpose in each essentialist theory, that it is indeed a definitive aspect of a theory in all its aspects.

To complete my argumentation, it would be necessary to show how the difference in explanatory purposes explains differences in further central aspects of these essentialist theories. One such aspect is the relation of essence and understanding, as we find it in Aristotle and Fine and to a limited extent also in Kripke, another one the relation between essence and ontological dependence, as we have it in Fine and Aristotle. And there is another interesting aspect where the difference in explanatory purposes becomes manifest. Aristotle, Kripke and Fine are all concerned with the 'particularity' of things, but Aristotle is interested in it in a clearly different sense than Kripke and Fine. For Aristotle, particularity, or being a '*tode ti*' (in one sense), seems to be about being a most definite and thereby fundamental entity of some kind, a substance.[98] Here essences and substantial forms seem to play an important role, though this has not been discussed, it seems, much in the literature. Being a particular in Kripke and in Fine in contrast seems to be about individuation, about being different from all other entities there are.

Another topic deserving more attention by a comprehensive comparison of the different essentialist theories is the correspondence between the modal logical structure of reality and the causal structure of reality, as I characterised it. This correspondence raises general questions about the ontological relation between these two structures, whether one is more fundamental than the other, or whether they are complementary in a sense. It seems *prima facie* as if the modal logical structure is grounded in the causal

[98] cf. §I.3.2.5.

structure of reality. But there are reasons to question this view. Fine, for instance, argues that the essence of a proposition P is determinative of what the grounds are for P's being the case (cf. §III.4.2). The essence qua identity of P seems not to correspond to an ontological cause here but to determine the 'causes' or grounds for P's being the case. This metaphysical role of essence qua identity seems *prima facie* not to be derivative from the causal structure of reality, but maybe rather complementary to it. Also, given that grounds are propositions or facts that explain other propositions, it seems that the notion of ground in Fine's propositional conception of essence plays in a way the role that the notion of cause plays in Aristotle, at least to some extent. An investigation of the relation between Aristotelian causes and Finean grounds and further between grounds and essences in Fine would be required to clarify the relation between the modal logical structure and the causal structure of reality in the case of Fine's essentialism at least.

Moreover, a deeper discussion of natural kind essentialism as Kripke defends it would be important. It needs to be clarified how it fits with the correspondence between the causal and the modal logical structure; and further, how the conception of a natural kind is related to universals as Aristotle conceives them, and to grounding. Another open and related question is how the laws of nature are exactly involved in Kripke's and Fine's essentialism. For together with the internal structure of physical things the laws of nature seem to play the causal roles in Kripke and Fine that essences play in Aristotle.

Finally, I have focused on arguing for differences rather than commonalities. But there are also certain noteworthy commonalities between all three essentialist theories. All three theories seem to assume that the world is an orderly place where the objects in it can be systematically and objectively classified into kinds in exactly one way. And they all are concerned with the role of particular sensible objects such as Beulah the cow. Aristotle argues that the particular is ontologically prior to the universal, particular substances are the underlying causes of all other beings. Kripke and also Fine argue, contra Quine, that metaphysical necessity has its source also in the essences and essential properties of particular objects of first order logic and not just in the relation between predicates. So there are some clear commonalities between the

three essentialist theories worth addressing. But this does not mean that they are about the same subject matter.

BIBLIOGRAPHICAL ABBREVIATIONS

Aristotle's Works

APo	Posterior Analytics
Cat	Categories
De Ani	De Anima
De Int	De Interpretatione
Met	Metaphysics
PA	Partes Animalium
Phys	Physics
Top	Topics

Plato's Works

Tim	Timaeus
Phil	Philebus
Rep	Republic
Soph	The Sophist

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[99] Quotes from Aristotle's work in general are by default from (Aristotle 1984). Quotes from the *Posterior Analytics* are from (Aristotle 2002).

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