




Rethinking Hart: From Open Texture to Prototype Theory—Analytic Philosophy Meets Cognitive Linguistics

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Abstract

The article is based on an observation that there are significant and non-arbitrary similarities between two, seemingly quite distant, theories that address the problem of linguistic categorization. One is the theory of open texture put forward by a prominent legal philosopher, Herbert L.A. Hart. The other is the theory of prototypes, originated from psychological research by Eleanor Rosch and developed by cognitively-oriented linguists, most notably Charles Fillmore, George Lakoff, and Ronald Langacker. Firstly, the origins of the open texture theory are presented, including the discussion of Friedrich Waismann's and Ludwig Wittgenstein's ideas and their impact on Hart's theory. Secondly, Hart's theory of open texture is examined, based on several articles and his masterpiece: *The Concept of Law* (Oxford: Oxford University Press 1961). Thirdly, a brief introduction to the prototype theory is provided, focusing on its reception in Cognitive Linguistics. Fourthly, a comparison of both theories is presented, including a sketch of a broader philosophical and historical background, as well as a detailed analysis of similarities and dissimilarities between them. The comparison results in a conclusion that, on linguistic grounds, the open texture theory can be viewed as an anticipation of prototype theory. Finally, several reservations are made in order to avoid possible confusions and some obvious objections.

Keywords Open texture · Prototype theory · Cognitive linguistics · Legal theory · Categorization · Vagueness

The law must predominantly, but by no means exclusively, refer to *classes* of person, and to *classes* of acts, things, and circumstances; and its successful operation over vast areas of social life depends on a widely diffused capacity to

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recognize particular acts, things, and circumstances as instances of the general classifications which the law makes.

Herbert L.A. Hart [22: 124]

If linguistics can be said to be any one thing, it is the study of categories: that is, the study of how language translates meaning into sound through the categorization of reality into discrete units and sets of units.

William Labov [28: 342]

1 Introduction

Categorisation, understood as the ability "to group different entities together as instances of the same kind" [46: 9] is intrinsic to both law and language, and consequently its study is vital for both juristic theory and linguistic theory. Despite these shared interests, legal scholars have long ignored linguistics and have barely noticed the significant transformations witnessed by the discipline since the 1950s. Remaining true to the old tradition, they would rather seek inspiration and guidance from the philosophy of language. However, philosophical ideas give rise to linguistic theories as well, and ever since Noam Chomsky's revolution it has become hardly possible to discuss philosophical problems of language without making reference to the prevailing trends in linguistic theory.

This article is based on an observation that there are significant and non-arbitrary similarities between two, seemingly quite distant, theories that address the problem of categorisation. One is the theory of *open texture*, put forward by the prominent legal philosopher Herbert L.A. Hart. The other is the theory of *prototype*, originated from psychological research by Eleanor Rosch and developed by cognitively-oriented linguists, most notably Charles Fillmore, George Lakoff, and Ronald Langacker. The aim of the study is to critically evaluate these similarities, as well as the potential dissimilarities, in light of a broader philosophical and historical background, in order to determine the mutual relation of both theories.

2 The Origins of Open Texture: Friedrich Waismann

The term "open texture" (originally: "Porosität der Begriffe" which translates directly as "porosity of concepts") was created by Friedrich Waismann (1896–1959). Waismann was an Austrian mathematician and philosopher, a member of the famous Vienna Circle, and a close friend of Ludwig Wittgenstein, who emigrated to the United Kingdom in 1938 and continued his academic career at Cambridge (1937–1939) and Oxford (1939–1959) [5: 13]. Waismann introduced the concept of open texture in a 1945 paper entitled *Verifiability* [48]; it is widely considered to be his best known idea [23: 32–33]. The paper was aimed at discrediting phenomenalism as a general theory of meaning. He wrote:

Open texture is a very fundamental characteristic of most, though not of all, empirical concepts, and it is this texture which prevents us from verifying conclusively most of our empirical statements. Take any material object statement. The terms which occur in it are non-exhaustive; that means that we cannot foresee completely all possible conditions in which they are to be used; there will always remain a possibility, however faint, that we have not taken into account something or other that may be relevant to their usage; and that means that we cannot foresee completely all the possible circumstances in which the statement is true or in which it is false. There will always remain a margin of uncertainty. Thus the absence of a conclusive verification is directly due to the open texture of the terms concerned [48: 3].

To illustrate the idea, Waismann used numerous extravagant examples, including a gigantic cat,¹ a disappearing friend,² and radioactive gold.³ In all those extraordinary, unforeseeable circumstances, he insisted, we would be hesitant about what to say. The reason for this is that empirical concepts cannot be defined with the absolute precision required by phenomenalism:

Try as we may, no concept is limited in such a way that there is no room for any doubt. We introduce a concept and limit it in *some* directions; for instance, we define gold in contrast to some other metals such as alloys. This suffices for our present needs, and we do not probe any farther. We tend to overlook the fact that there are always other directions in which the concept has not been defined. And if we did, we could easily imagine conditions which would necessitate new limitations. In short, it is not possible to define a concept like gold with absolute precision, i.e. in such a way that every nook and cranny is blocked against entry or doubt. That is what is meant by the open texture of a concept [48: 3].

Waismann contrasted the open texture of empirical concepts with the closed texture of mathematical ones, which led to a distinction between natural languages and formalised languages. At the same time, he contrasted open texture with vagueness. He viewed open texture as something like possibility of vagueness [48: 3, 5, 9]. It should be mentioned that Waismann's critique, as spiteful as it is, nevertheless cannot be understood as a total refutation of semantic verificationism. Rather, he tried to warn us that natural language has different levels (or "distinct strata") and logical

¹ "Suppose I have to verify a statement such as 'There is a cat next door'; suppose I go over to the next room, open the door, look into it and actually see a cat. Is this enough to prove my statement? Or must I, in addition to it, touch the cat, pat him and induce him to purr? And supposing that I had done all these things, can I then be absolutely certain that my statement was true? (...) What, for instance, should I say when that creature later on grew to a gigantic size?" [48: 2].

² "Again, suppose I say 'There is my friend over there'. What if on drawing closer in order to shake hands with him he suddenly disappeared? 'Therefore it was not my friend but some delusion or other.' But suppose a few seconds later I saw him again, could grasp his hand, etc. What then?" [48: 2].

³ "The notion of gold seems to be defined with absolute precision, say by the spectrum of gold with its characteristic lines. Now what would you say if a substance was discovered that looked like gold, satisfied all the chemical tests for gold, whilst it emitted a new sort of radiation?" [48: 3].

inferences from a statement of one stratum to a statement of another are likely to lose their validity. Consequently, Waismann suggested speaking about strengthening or weakening, rather than proving or disproving, empirical statements through our observations [48: 7, 9–10].

3 Hart's Theory of Open Texture

The notion of open texture made its way into legal theory through the work of Herbert L.A. Hart. Hart, one of the most prominent figures of the twentieth century's jurisprudence, worked in Oxford since 1945. Given the manner of academic life of that time, it is very unlikely that he did not know Waismann personally, or that he did not have meaningful philosophical conversations with him. As a matter of fact, Hart did mention Waismann and his article *Verifiability* in an endnote to his famous book *The Concept of Law* [22].⁴ Hence, it is not controversial to assume that Hart borrowed the term "open texture" from Waismann. It should be noted, however, that the idea had first appeared in his 1958 article *Positivism and the Separation of Law and Morals* [19], and some of its aspects in an even earlier article *Theory and Definition in Jurisprudence* [20]. These articles do not use the term "open texture", nor do they include any reference to Waismann.⁵ All this leads to a hypothesis that Hart's idea was not a direct application of Waismann's concept, though it was almost certainly inspired by it. For a more detailed discussion on the origins of open texture see Bix [4], Schauer [42], and Bunikowski [5].

Hart's explanation of the concept of open texture is based on a famous hypothetical rule: "No Vehicles in the Park":

A legal rule forbids you to take a vehicle into the public park. Plainly this forbids an automobile, but what about bicycles, roller skates, toy automobiles? What about airplanes? Are these, as we say to be called "vehicles" for the purpose of the rule or not? If we are to communicate with each other at all, and if, as in the most elementary form of law, we are to express our intentions that a certain type of behavior be regulated by rules, then the general words we use like "vehicle" in the case I consider must have some standard instance in which no doubts are felt about its application. There must be a core of settled meaning, but there will be, as well, a penumbra of debatable cases in which words are neither obviously applicable nor obviously ruled out. These cases will each have some features in common with the standard case; they will lack others or be accompanied by features not present in the standard case [19: 607].

Exactly the same phenomenon is described in his 1961 book:

⁴ It should also be noted that Hart elaborated on Waismann's idea of open texture in a later article [21: 275–276].

⁵ Hart mentions only the "open character" of language [19: 609].

There will indeed be plain cases constantly recurring in similar contexts to which general expressions are clearly applicable ('If anything is a vehicle a motor-car is one') but there will also be cases where it is not clear whether they apply or not. ('Does "vehicle" used here include bicycles, airplanes, roller skates?'). The latter are fact-situations, continually thrown up by nature or human invention, which possess only some of the features of the plain cases but others which they lack. [22: 126].

Note that while Waismann's examples were obviously bizarre (e.g. can a gigantic cat still be called a "cat"), Hart's examples are rather plain. Waismann was talking about extreme situations that would not happen ("but they might happen") and therefore could be neither imagined nor foreseen [48: 8]. Hart was talking about situations that not only can be imagined, but can also be described with existing linguistic tools. This constitutes the first significant difference between their ideas, which led several scholars to believe that they in fact wrote about different things [4, 42]. But are they really so different?

I agree that Waismann's idea can be viewed as an extreme version of what Hart had in mind [4: 64]. Let us not forget that both of these philosophers pursued quite different goals. Waismann was examining the possibility of verifying linguistic meaning in accordance with the principles of phenomenalism. To prove that it is not even theoretically plausible, he had to put forward extreme examples. Ordinary examples, such as those presented by Hart, could be easily objected to by offering a more detailed description. Hart, on the other hand, was explaining the nature of communicating general standards of conduct through rules expressed in language. His examples involve easily predictable situations, yet still they manage to cast some doubts as to the application of a given rule. And that is enough for Hart to make his claim. In other words: extreme examples are *necessary* to refute the verification theory of meaning in natural language (Waismann's goal), while ordinary examples are *sufficient* to undermine legal formalism (one of Hart's goals).

As a matter of fact, not all the examples in Waismann's article are extreme. For instance, Waismann acknowledges the open texture of the term "intelligent" [48: 4].⁶ He does not evoke any bizarre context to argue for that, he simply observes that we cannot fully specify how a man should behave in certain circumstances to be considered intelligent. I believe that this particular example, if looked at in more detail, would fall close to the examples used by Hart. With this in mind, open texture can be viewed as a continuum of phenomena stretching from unforeseen but predictable circumstances on the one hand (Hart's examples), to completely novel and unforeseeable ones on the other (Waismann's examples); it is just a matter of degree. Note that the notions of foreseeability or predictability are vague and highly subjective. Waismann did not bother to provide any criterion or threshold to be met here. Therefore, any line drawn between Waismann's open texture and Hart's open texture must

⁶ Similar remarks apply to certain psychological statements such as 'He is an intelligent person'; here again it is due to the open texture of a term like 'intelligent' that the statement cannot be reduced to a conjunction or disjunction of statements which specify the way a man would behave in such-and-such circumstances.

be arbitrary, at least on semantic grounds. This is another reason to insist that the difference between them is quantitative, not qualitative.⁷

There is, nevertheless, at least one more significant difference between Waismann and Hart. Waismann, as a philosopher of science, was concerned with descriptive language, while Hart, a former barrister and a legal theorist, was concerned with prescriptive language, namely the language of legal rules. In fact, Hart most evidently wrote interchangeably about open texture of language, natural language, rules, verbally formulated rules, and even any form of communication concerning matters of facts [22: 124–153]. I believe that the distinction between descriptive and prescriptive language, in the context being discussed, can also be given a linguistic interpretation. Namely, it can be identified with the distinction between two perspectives of lexical studies: onomasiological and semasiological.⁸ When Waismann presents examples of open texture, he describes a *hypothetical situation* and asks how we should name it.⁹ He clearly adopts an onomasiological perspective. Hart takes exactly the opposite direction: he formulates a *hypothetical rule* (including a word in question) and asks what situations are covered by it.¹⁰ Therefore, his perspective is semasiological. It is natural that when we start with a thing (or a concept), we will likely end up with some appropriate word for naming it. It takes extraordinary circumstances (bizarre things or concepts) to make naming impossible. Conversely, when we start with a specific word in a specific context (either explicitly expressed or implicitly assumed), it takes only a small change in the thing (or a concept) to question the adequacy of reference. This is another way of explaining the difference between Waismann's and Hart's approaches while maintaining the view that they both described essentially the same phenomenon.

4 The Cognitive Theory of Prototypes

Prototype theory is a theory of categorisation originating from the work of American psychologist and anthropologist, Eleanor Rosch (earlier: Heider). In the 1970s, Rosch conducted several experiments on human categorisation, which were reported on and commented in a series of now-classic articles, including: [35, 36, 37, 38, 39]. The results of her research called into question the so-called classical approach to

⁷ This claim is further supported by an argument that, despite Waismann's own words, from a pragmatic point of view open texture should be treated as a type of vagueness, see: Gizbert-Studnicki [15: 141–144].

⁸ "The distinction between semasiology and onomasiology, in other words, equals the distinction between *meaning* and *naming*: semasiology takes its starting point in the word as a form, and charts the meanings that the word can occur with; onomasiology takes its starting point in a concept, and investigates by which different expressions the concept can be designated, or named. Between the two, there is a difference of perspective: semasiology starts from the expression and looks at its meanings, onomasiology starts from the meaning and looks at the different expressions" [13: 23].

⁹ For instance: "Suppose I come across a being that looks like a man, speaks like a man, behaves like a man, and is only one span tall—shall I say it is a man?" [48: 3].

¹⁰ For instance: "A legal rule forbids you to take a vehicle into the public park. Plainly this forbids an automobile, but what about bicycles, roller skates, toy automobiles? What about air-planes?" [19: 607].

human categorisation, attributed to Aristotle and adopted in numerous scientific disciplines, including psychology, anthropology, philosophy, and linguistics. According to this approach, conceptual categories are defined by sets of features that are both necessary and sufficient. An object is recognised as a member of a category if it exhibits all those features. It follows that (1) all the members of a category are equal, (2) membership of a category is an all-or-nothing affair, and therefore (3) categories have rigid boundaries [40: 91–93].

According to Rosch, such an approach does not hold up to empirical facts. She argued that many conceptual categories, though probably not all, are instead organised around the most representative example labelled “the prototype”. The membership of a category is established on the basis of similarity to the prototype, rather than by satisfying a set of necessary and sufficient conditions. It results with an internal structure: “categories are composed of a «core meaning» which consists of the «clearest cases» (best examples) of the category, «surrounded» by other category members of decreasing similarity to that core meaning” [37: 112]. The research included various types of semantic categories, i.e. colour names, geometric forms names, natural-kind names, and artefact names at different levels of abstractness (including Hart’s beloved category: VEHICLE) [36–38]. Rosch’s findings were welcomed by many as ground-breaking and were eagerly developed into several scientific directions [14: 2]. My concern in this article is mostly limited to how they were received in linguistics, though psychological literature is also used as a complementary source.

The discipline of linguistics in the 1970s was still dominated by Noam Chomsky’s transformative-generative paradigm, despite growing dissatisfaction among some of his followers.¹¹ The semantic component of transformative-generative grammar, as offered by J. Katz and J. Fodor, took the form of a componential analysis [26]. It was a perfect example of the aforementioned classical approach, satisfying all its premises. A famous example of such an approach is the decompositional analysis of the concept BACHELOR, resulting in a set of abstract semantic features: [HUMAN], [MALE], [ADULT], [NEVER MARRIED]. These features are claimed to be located on a purely linguistic (semantic) level of human conceptual knowledge, as opposed to the general knowledge of the world (encyclopaedic).

Categorisation based on prototypes offered a radically different approach. It was quickly taken up by linguists not satisfied with the then prevailing paradigm and formed the foundations for the construction of a new approach labelled Cognitive Linguistics. It was successfully utilised not only in the most obvious field of study, i.e. lexical semantics, but also in various other branches of linguistics, including syntactic theory, morphology, phonology etc.[30, 31, 46]. For convenience, it is often referred to as ‘prototype theory’. As a matter of fact it is not a single, uniform *theory*, but rather a general approach with certain shared characteristics. The following characteristics (sometimes referred to as prototypical *effects*) were proposed by Dirk Geerearts [14: 6–8]:

¹¹ The split between Chomsky and some of his colleagues and former students was even dubbed “Linguistic Wars”, see [18].

1. Prototypical categories cannot be defined by using a single set of criterial (necessary and sufficient) features. Take a classic example of the category BIRD. There are certain features that we normally expect a bird to have, like the ability to fly, having wings, feathers and a beak, hatching from eggs, having a certain shape and size, perching on trees, tweeting, etc. However, there is no set of features characteristic for all birds and birds only. There are obviously birds that are extraordinarily small or large (i.e. humming bird, ostrich and condor), birds that do not fly (i.e. turkey, ostrich and penguin), birds that do not have usual feathers (i.e. penguin and kiwi), or even usual wings (kiwi). All birds hatch from eggs and have beaks, but there are also other animals that share these features.
2. A prototypical categories' structure takes the form of a radial set of clustered and overlapping senses. This characteristic is attributed to Ludwig Wittgenstein and called a "family resemblance".¹² To elucidate the idea, Wittgenstein put forward a famous example of the category GAME: "Consider for example the proceedings that we call "games". I mean board-games, cardgames, ball-games, Olympic games, and so on. What is common to them all?—Don't say: "There *must* be something common, or they would not be called 'games'"—but *look* and *see* whether there is anything common to all.—For if you look at them you will not see something that is common to *all*, but similarities, relationships, and a whole series of them at that.[...] And we can go through the many, many other groups of games in the same way; can see how similarities crop up and disappear. And the result of this examination is: we see a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarities of detail" [50: 31–32]. Note that this characteristic is a direct consequence of the previous one: if there is no single set of joint features, there must be some other principle for identifying members of a category; and cognitive psychologist found this principle, "governing the formation of the prototype structure of semantic categories" [35: 574], in the notion of family resemblance. A robin, a sparrow, and a bluebird are roughly of the same size and shape, and they share the ability to fly with eagles, owls, and geese. All these types of birds have feathers, just like ostriches, chicken, and emus. Geese have a similar shape to ducks and penguins, despite the fact that the latter do not have typical feathers. At the same time, chickens have a similar shape to kiwis, which are otherwise quite unique. We can see, therefore, how the category BIRD forms "a complicated network of similarities, overlapping and criss-crossing", namely a family resemblance structure.
3. Prototypical categories exhibit degrees of category membership also known as the typicality effect or goodness-of-example rating. It means that not every member of a category is equally representative—some members are better examples of the category than others, because they exhibit more characteristic features of a category. In other words, they metaphorically occupy the maximum overlapping area within a category (the "core" of a category). This characteristic can easily

¹² Note, however, that the idea of similarity-based categorisation is much older than Wittgenstein, see [3, 32].

be linked back to the previous one. A robin is a more typical bird than an ostrich, because it has a more bird-like size, shape, ability to fly and it tweets. By the same token, an apple is a more typical fruit than an avocado, and an automobile is a more typical vehicle than a skateboard [38: 229–233]. The clearest case of a category membership is called a prototype [39: 11]. Note that the notion of a prototype is context-dependent and will shift according to linguistic, as well as extralinguistic, (i.e. historical, geographical, social and other) changes [40: 99–105]. Thus, while a robin is the most prototypical bird for American responders, Central-European responders would probably favour a sparrow. Similarly, an automobile was found to be the most prototypical vehicle back in 1975, but obviously it would not be so in, say, 1875. Despite their relativity and variability, prototypes have a psychological reality. Extensive research by Rosch and others has proved that prototypes are involved in category processing, i.e. in association, speed of reaction, recognition, probability judgments, drawing inferences, learning, and memorising [37, 39, 40]. They are also somewhat encoded in natural languages in a form of what are termed hedge words, such as "typical", "technically", "virtually", "strictly speaking", "sort of", "par excellence", etc.[29]. For instance, we can say: "A sparrow is a typical bird", while a sentence: "A penguin is a typical bird" would rather be considered false. On the other hand, it is perfectly fine to say: "A tomato is technically a fruit", while a sentence: "An apple is technically a fruit" sounds peculiar—an apple is *just* a fruit, not *technically* a fruit.

4. Prototypical categories are blurred at the edges, which means that they do not have rigid boundaries. This characteristic is again inspired by Wittgenstein, who claimed not only that concepts lack rigid boundaries, but that it is rather a virtue than a flaw: "For how is the concept of a game bounded? What still counts as a game and what no longer does? Can you give the boundary? No. You can draw one; for none has so far been drawn. (But that never troubled you before when you used the word «game»)." [50: 33]. The idea that semantic categories may not have rigid boundaries was further supported by fuzzy set theory in mathematics and fuzzy logic [29, for a recent discussion of the subject, see [7]]. It links with the previous characteristics in that the degree of membership of a category may diminish to the point where it is no longer clear that an object still belongs to the category. This is how so-called borderline cases arise. For example, according to Rosch's surveys, tomatoes and coconuts are borderline fruits, while skis and surfboard are borderline vehicles [38: 229–230].

From a semiotic standpoint, it may be noted that the first and the second of these characteristics pertain to the intensional (or definitional) level of a category, while the third and the fourth pertain to the extensional (or referential) level [14: 7–8]. It may also be observed that, while the first (lack of rigid definition) and the fourth (lack of rigid boundaries) characteristics have mostly a negative aspect, the second (family resemblance) and the third (typicality) render mechanisms of categorisation in a positive way. However, despite these links and others between the abovementioned characteristics, it must be stressed that all of them need not co-occur within any given category. A category may show some prototypical effects, but lack others

at the same time. In particular, typicality should not be equated with vagueness. For example, although ostriches, penguins and kiwis are highly atypical birds, they are nonetheless still 100% birds. In other words, the notion of prototypicality is itself prototypical [14: 8–14].

The above list does not include one very important characteristic of a meta-theoretical character.¹³ It is the assumption, championed by Cognitive Linguistics, that linguistic knowledge cannot be precisely separated from a background of general knowledge about the world. In other words, there is no strict border between linguistic meaning and other areas of conceptual information and, consequently, between semantics and pragmatics [31: 38–43]. It can be illustrated by a famous counter-analysis of the concept BACHELOR by Charles Fillmore. He asks how old an unmarried man has to be before we can call him "a bachelor"; or should we call "a bachelor" a man who is professionally committed to the single life (i.e. a priest). Such questions are ignored in a componential analysis as pertaining to extralinguistic information. Yet Fillmore claims that they bear significance for our concept of bachelorhood: "According to a prototype theory of meaning, these concepts [the concepts of bachelor and widow] are defined in the context of a simple world in which men typically marry around a certain age, they marry once, they marry exclusively, and they stay married until one partner dies. Men who are unmarried at the time when they could be married are called bachelors" [8: 129]. It is this background, tacit, encyclopaedic type of knowledge that is required to understand concepts such as BACHELOR. Here Fillmore introduces the notion of a semantic frame: "certain schemata or frameworks of concepts or terms which link together as a system, which impose structure or coherence on some aspects of human experience [...]" [8: 123]. The idea has been widely shared among cognitive linguists, often using different names, such as "schema", "scenario", "idealized cognitive model", etc. [see: 9, 30: 68–76, 31: 46–47].

Some attention should be paid to the notion of the prototype itself. "Prototype" appears to be a very flexible, polysemous term. Some passages from Rosch's early works suggest that it refers to a specific member of a category, constituting the best example of that category.¹⁴ A more careful reading reveals, however, that a prototype cannot be identified with any specific entity. Therefore, different scholars treat it as a potential example of a category, an abstract, idealised member of a category, a cluster of attributes providing the highest cue validity, or as statistical functions over attributes [see [17, 25, 47]]. Still, Rosch warned against the "reification" of the notion of prototype, as either a specific category member or mental structure:

[P]rototypes themselves do not constitute any particular model of processes, representations, or learning.[...] To speak of a prototype at all is simply a convenient grammatical fiction; what is really referred to are judgments of degree of prototypicality. Only in some artificial categories is there by definition a lit-

¹³ Geerearts [14: 7] asserts that this characteristic can be derived from characteristics (1) and (2), but I doubt whether it would be clear enough for a legal scholar who is a supposed reader of this article.

¹⁴ "By prototypes of categories, we have generally meant the clearest cases of category membership defined operationally by people's judgments of goodness of membership in the category" [37: 11].

eral single prototype [...]. For natural-language categories, to speak of a single entity that is the prototype is either a gross misunderstanding of the empirical data or a covert theory of mental representation [38: 200].

Rosch herself has long insisted that there are different types of prototypes that are appropriate for different types of conceptual categories. In a recent overview, she distinguished no less than fourteen such types [40: 101–103]. With all that in mind, prototypicality should probably best be treated as a "surface" phenomenon, not a direct insight into the categorical internal structure. This way, the characteristic features of prototypical categories (typicality, vagueness etc.) are viewed as effects, rather than causes. The emphasis is placed on the semantic background (frames, idealised cognitive models, etc.) and cognitive mechanisms utilised for creating, processing and extending categories [see i.e. [30: 66–135, 40: 101–103].

5 The Comparison

The above brief introductions to the theories in question should by no means be considered exhaustive. This is especially true for prototype theory, which is still the subject of much attention in the academic world and continues to find application in new fields of study. Given the subject of my research, I had to concentrate on points of contact between these theories and leave aside some of their aspects, as interesting as they are.

A few terminological remarks are necessary, in order to avoid possible confusion. The expression "Hart's theory" will be used to denote Hart's views on language, and not his general theory of law, and will be used interchangeably with the term "open texture theory".¹⁵ Waismann's ideas will generally not be discussed at this point, unless specified otherwise. I will use the terms "category" and "concept" interchangeably, assuming that differences between them are mostly a matter of scientific perspective [40: 91, 30: XIII–XIV]. I also adopt the view, shared by Hart, Wittgenstein, Rosch, and other cited thinkers, that concepts are denoted by words.¹⁶

By now it should be clear that there are many intersections between open texture theory and prototype theory. These intersections have been noted by scholars from both disciplines; their insights will be used as references in the following section. What is still lacking, however, is a more thorough comparison that would accommodate perspectives from legal theory and linguistics, as well as a broader philosophical background. An attempt to make such a comparison is presented below. The comparison is meant to be neutral in the sense that it does not present arguments for or against either of the theories in question. In addition, it is not concerned with the

¹⁵ For the sake of clarity, I will focus on the open texture of linguistic expressions and leave aside the other problem discussed by Hart, namely that of communication standards of conduct by example (precedents) [22: 124–135].

¹⁶ This is not to say that there are no differences between conceptual knowledge and linguistic meaning; however, for the purpose of this article there is no need to pursue this distinction.

previous applications of prototype theory in a legal environment, though it is worth noting that they were generally successful [16, 33, 43, 44, 49].

5.1 Philosophical Background of Both Theories

To begin with, it is necessary to lay down genetic links between the theories in question. Waismann's paper *Verifiability* was presented and originally published in 1945. Hart's article and book were published in 1958 and 1961 respectively. The influence of Waismann's idea on Hart's theory is obvious and has already been discussed. What is less obvious is that Waismann provided inspiration for prototype theory as well. One of the first linguists to pick up prototype theory was Charles Fillmore. In his 1975 paper, he traced the idea back to Waismann:

The prototype idea can be seen in the color term studies of B. Berlin and P. Kay (1969) and in the 'natural category' researches of E. Rosch (1973). I find it in the 'open texture' idea of the philosopher F. Waismann (1952) [8: 123].

Likewise, another linguist links Waismann's open texture to prototype theory, labeling it as a "principled indeterminacy" that is distinct from the usual fuzziness of prototypical categories, but which can nevertheless give rise to boundary problems [14: 8]. I have not found a direct reference to Waismann in any of Rosch's papers,¹⁷ but the similarities between their ideas apparently did not go unnoticed by others.

Another area to explore is the role of the thought of Ludwig Wittgenstein in the forging of both theories. Rosch explicitly referred to his concept of family resemblance, presented in *Philosophical Investigations* (published in 1953), on many occasions and declared it to be "one of the major structural principles that [...] may govern the formation of the prototype structure of semantic categories" [35: 574]. The importance of Wittgenstein's insights is widely appreciated amongst proponents of prototype theory and, as we have seen, family resemblance is considered one its key characteristics.

Both Waismann and Hart were also undoubtedly influenced by Wittgenstein. As a matter of fact, much of Waismann's work has been regarded as a mere explanation of Wittgenstein's ideas. The very concept of open texture is probably inspired by a middle period of Wittgenstein's thought. It also appears to be compatible with the approach adopted by the latter in *Philosophical Investigations* [4: 51–52; 60–61]. What is more, in *Verifiability* Waismann mentioned the concept of "family likeness", which seems to be identical to Wittgenstein's concept of family resemblance [48: 13]. As for Hart, in the 1961 book he made an explicit reference to Wittgenstein in an end note, acknowledging his idea of family resemblance and its importance for legal theory [22: 279–280]. He thoroughly applied this very approach in an earlier article *Definition and theory in jurisprudence* [20].

¹⁷ Note, however, that one of Rosch's papers contains a concept reminiscent of the Waismann's original idea of the *porosity* of concepts: "The conceptual system appears to need to be creatively porous in each instance to what humans know, perceive, and do in order to understand and perform operations on concepts" [41: 110].

Yet another philosopher who presumably influenced both theories was John L. Austin [49: 198 footnote]. Hart personally admitted that he was the most important figure in his philosophical development (with Wittgenstein coming second and Waismann also making the list) [45: 275]. In his 1961 book, he made several general references to Austin's work.¹⁸ Austin is also a possible contributor to the theory of open texture. He worked at Oxford University together with Waismann and Hart. In a 1946 paper—*Other Minds*—he described a phenomenon most evidently identical to Waismann's open texture: he portrayed a creature that appeared to be a goldfinch according to the existing definition of goldfinches, but which then proceeded to explode or quote Virginia Woolf, commenting that under such circumstances "we don't know what to say" [1: 56]. There is also a connection between Austin and prototype theory. His 1940 paper *The Meaning of Words* contains ideas fully embraced in later prototype studies, including family resemblance, semantic frames, and the role of metonymy and metaphor as conceptual tools. According to Lakoff, Austin's analysis was a preview of most of the elements of modern cognitive semantics [30: 17–23].

As a summary, there are some indirect, yet significant, genetic links between open texture and prototype theory. Both theories were inspired by the ideas of the same philosophers, namely Friedrich Waismann, Ludwig Wittgenstein, and—to a lesser extent—John L. Austin. This may be obvious in the case of open texture theory, given Hart's academic environment and philosophical preferences. It is certainly less obvious in the case of prototype theory, which originated in a quite distant field of study, namely in the field of experimental cognitive psychology.

5.2 A Direct Comparison of Characteristics

Having outlined the philosophical background of both theories, we can now move further and compare their contents. I will argue that Hart's open texture theory conforms with all the fundamental characteristics of prototype theory, as identified previously, namely:

1. An absence of rigid definition
2. Family resemblance
3. Degrees of representativity (typicality)
4. An absence of rigid borders (vagueness)
5. Context-dependence (semantic frames, ICMs, etc.)

Let us begin with the question of classical definitions. Hart's scepticism about definitions in jurisprudence has been well known ever since the publication of *Definition and theory in jurisprudence*. In this paper, Hart criticises the "traditional method of definition". The critique is aimed at legal scholars, but it is perfectly valid

¹⁸ Note that John Longshaw Austin (a philosopher of language) is not to be confused with John Austin (a legal philosopher from XIX century), who is referred to by Hart in "The Concept of Law" much more frequently.

in respect of legal officials and lawyers. By "traditional methods of definition" he means two things: abstracting single words from their linguistic context and then characterising them by *genus proximus* and *differentia specifica* [20: 31]. Such an approach is clearly an example of the classical theory of categorisation and can be attributed directly to Aristotle. What is more, Hart also explicitly criticised the criterial approach to definition on several occasions:

[...] the mistaken belief [...] that if a word is not a mere homonym then all the instances to which it is applied must possess either a single quality or a single set of qualities in common [20: 22 footnote 1].

Another example comes from *Positivism and the separation of law and morals*, where he discussed the rule prohibiting taking a stolen vehicle across state borders, with the presumed *vehicle* being, in fact, an airplane:

[a judge] thinks of a standard case and then arbitrarily identifies certain features in it—for example, in the case of a vehicle, (1) normally used on land, (2) capable of carrying a human person, (3) capable of being self-propelled and treats these three as always necessary and always sufficient conditions for the use in all contexts of the word «vehicle», irrespective of the social consequences of giving it this interpretation [19: 611, see also [22: 129].

One of Hart's remarks appears to be a direct critique of the linguistic method of componential analysis based on abstract semantic features, an approach so vigorously fought against by prototype theorists:

If the world in which we live were characterized only by a finite number of features, and these together with all the modes in which they could combine were known to us, the provision could be made in advance for every possibility [but it cannot] [22: 128].

The above examples prove that Hart shared the objections to classical definitions with prototype theorists. This should not come as a surprise, since we have already seen that he was strongly influenced by Wittgenstein and his idea of family resemblance, which goes directly against the traditional approach to definition. Hart repeatedly used the notion of family resemblance in his analyses, either explicitly or implicitly:

It is easy to see here that no one of these different ways of being out is more essentially what the word means than the others, and that there need be nothing common to all these ways of being out other than their falling under the same rule, though there *may* be some similarity or analogy between them [20: 29].

There must be a core of settled meaning, but there will be, as well, a penumbra of debatable cases in which words are neither obviously applicable nor obviously ruled out. These cases will each have some features in common with the standard case; they will lack others or be accompanied by features not present in the standard case [19: 607].

There will indeed be plain cases constantly recurring in similar contexts to which general expressions are clearly applicable ('If anything is a vehicle a

motor-car is one') but there will also be cases where it is not clear whether they apply or not. ('Does "vehicle" used here include bicycles, airplanes, roller skates?'). The latter are fact-situations, continually thrown up by nature or human invention, which possess only some of the features of the plain cases, but others which they lack [22: 126].

The above quotations come from three different pieces of Hart's work. Apparently, the idea of family resemblance as a mechanism of conceptual structure was cherished by him throughout his academic career. There are two important remarks to be made in the context of prototype theory. Firstly, Hart combined family resemblance with graded membership of a category, namely the distinction between the core and the penumbra. This differentiates his theory from Wittgenstein's, at least given the predominant reading of the latter. At the same time, it brings Hart's theory even closer to prototype theory. Secondly, Hart—just as Wittgenstein—recognised that different senses of a word may be connected by virtue of analogy, which is one of the fundamental claims of not only prototype theory, but cognitive semantics in general [see: 30].

As we can see, Hart's theory conforms to the intensional aspect of prototype theory: it renders legal concepts as (1) lacking rigid definitions and (2) internally structured by clusters of overlapping senses (family resemblance). Nevertheless, it is the extensional aspect of Hart's theory that has earned him so much attention over the past fifty years. It was famously presented as the distinction between the core and the penumbra of a word's meaning:

There must be a core of settled meaning, but there will be, as well, a penumbra of debatable cases in which words are neither obviously applicable nor obviously ruled out [19: 607].

In *Positivism and the Separation of law and morals*, Hart labelled this phenomenon as "problems of the penumbra" [19: 607–608] and later adopted the term "open texture" for the same purpose [22: 128]. Regardless of the terminology, this distinction clearly corresponds to the distinction between the centre and the periphery of a conceptual category, which constitutes a cornerstone of prototype theory.¹⁹ This point has been duly discerned by both legal theorists [34: 1000, 6: 130], linguists [2: 65] and philosophers [24: 958]. Obviously, Hart did not use the term "prototype", which has a psychological provenience. Instead, he used a number of synonymous expressions like: "plain case", "paradigm case", "clear case", "standard instance", "standard case", etc. By contrast, he labelled objects metaphorically situated on the peripheries of a category as "penumbral cases" or "borderline cases". From a pragmatic point of view: "[...] there are reasons both for and against our use of a general term, and no firm convention or general agreement dictates its use, or, on the other hand, its rejection by the person concerned to classify" [22: 127]. The result of this

¹⁹ We should remember, however, that both these distinctions are based on a long-cherished spatial metaphor. Concepts are not areas; hence there are also no-spatial models of conceptual categories [see: 17: 1].

phenomenon is linguistic indeterminacy, also referred to by Hart as "vagueness", "open character", "penumbra of uncertainty", "open texture", etc. Hart does not use terms like 'blurred edges' or 'fuzzy borders' of a category, characteristic for prototype theory, but again, this is only a matter of terminology.

The above quotations allow us to conclude that, on an extensional level, Hart's theory also conforms to the basic tenets of prototype theory, namely it recognises: (3) that membership in a category is gradable, and (4) that the boundaries of a category are not definite.

The important question now is what makes the distinction of the core and the penumbra. The terminology Hart uses in this context, such as "core of settled meaning", may suggest that the 'core' is synonymous with the literal or plain meaning of a general term, and thus context-independent. Some scholars assert just that [42: 18], and this view would be indeed dissonant with prototype theory [49: 198]. However, it is questionable whether it can really be attributed to Hart:

The plain case, where the general terms seem to need no interpretation and where the recognition of instances seems unproblematic or 'automatic', are only the familiar ones, constantly recurring in similar contexts, where there is general agreement in judgments as to the applicability of the classifying terms [22: 126].

This quotation offers two important insights into Hart's theory. Firstly, that the automaticity of plain cases is only seeming, and therefore should not be conflated with any inherent, unquestionable, plainly semantic content (e.g. literal meaning). Secondly, that the "core" of a concept is a product of pragmatic factors,²⁰ specifically of frequent occurrences. Although large numbers of studies have proved that the frequency of instantiation is only one possible source of prototypical effects [37: 143, 17: 8–9], one can hardly blame Hart for not conducting psychological experiments to identify the others. We can see that he was going in the right direction. This claim is supported by the approach to the definition he adopted in the 1954 paper. Having criticised the classical approach, he offered a different "method of elucidation" of general terms. This method involves stipulating truth-conditions for sentences containing the term in question. Hart recognises that "[i]t is obvious that the use of these sentences silently assumes a special and very complicated setting, namely the existence of a legal system with all that this implies by way of general obedience, the operation of the sanctions of the system, and the general likelihood that this will continue. However, though this complex situation is assumed in the use of these statements of rights or duties, they do not *state* that it exists" [20: 27]. These truth-conditions, as well as Hart's justification of giving them, bear a striking resemblance to Fillmore's notion of a semantic frame and his analysis of the concept of a bachelor.²¹ Therefore, Hart acknowledges another characteristic of prototype theory, namely (5) that conceptual categories are embedded in tacit, encyclopaedic

²⁰ Accordingly, in another passage Hart writes about "core of certainty" and "penumbra of doubt" [22: 123].

²¹ See the quotation on page 8.

knowledge in the form of "frames", "schemas", "scenarios", "idealized cognitive models", etc.

The previous paragraph goes directly against an analysis of Hart's theory presented by Steven L. Winter [49: 197–206]. Winter is a true pioneer in applying cognitive linguistics to legal and political theory, and an uncontested champion of the cognitive legal studies movement. Twenty years of his cognitive-oriented analyses were crowned with a 2001 book, *A Clearing in the Forest* [49]. The book is an impressive attempt to translate various aspects of cognitive linguistics and psychology into legal theory and practice, full of erudition, case law analyses, and literary examples. That being said, I believe that Winter's treatment of Hart's theory is unfair. Although he does credit Hart with the discovery of prototypical effects in legal rules, he still criticises the core-penumbra distinction. His critique pertains not to the distinction itself, as prototype theory clearly supports that distinction, but to the justification offered by Hart: "For him [Hart], the plain case or standard instance represented a *hard* core of *settled* meaning, rather the contingent product of a motivated, adaptive process of categorisation" [49: 198]. In a similar fashion, Winter notes that "[t]he metaphor of «open texture» [...] suggests the image of a tapestry that, though unfinished at the margins, is tightly woven at its centre" [49: 198]. This leads to a diagnosis that Hart did not appreciate "the degree to which prototype effects are themselves the product of the tacit knowledge of context and purpose that is integral to categorization" [49: 198]. Ironically, it seems that Winter, whose main theme in the book is the pervasiveness of a cognitive metaphor, took the metaphors used by Hart too literally. Hart might write about a *hard core of settled meaning*, but as the discussion in the previous paragraph proves, he did acknowledge that the whole notion has a pragmatic nature. Not only did he appreciate the role of extralinguistic context in establishing the core of legal concepts, but he took also advantage of it in his approach to definition in law. As already indicated, Hart's findings about the internal structure of concepts are limited both in scope and in depth, as compared to the research of cognitive linguists and psychologists, and to no surprise. However, that does not undermine his theory. Winter goes as far as claiming that "once we understand how such «core meanings» actually arise, Hart's whole enterprise collapses" [49: 200]. In my opinion, the contrary is true. The achievements of prototype theory offer support and refinement for the open texture theory.²²

5.3 Meta-theoretical Position

One final similarity between Hart's theory and prototype theory should be mentioned. It refers to no particular features of these theories, but rather to their meta-theoretical position in the disciplines they come from. The general purpose of open texture theory for Hart was to establish a middle-ground between two extreme positions in the tradition of legal thought: formalism and rule-scepticism, which he

²² Winter's evaluation of the open texture theory has further consequences in that he openly rejects legal positivism as a general theory of law [49: 199–206]. This is a very compelling subject that I have to refrain from in this article, leaving it for another occasion.

famously dubbed "the Scylla and Charybdis of juristic theory" [22: 147]. On the one hand, he rejected the possibility of mechanical jurisprudence associated with legal formalism, namely the idea that legal rules can be applied to cases through the sole use of logical deduction. Such approach seems plausible in plain cases, but it will inevitably fail in cases of the penumbra. On the other hand, he rejected another extreme view, namely rule-scepticism, associated mostly with American legal realists who refused to credit legal rules with any binding force due to the indeterminacy of linguistic meaning. Hart claimed that such a view equates the whole law with penumbra cases and ignores the existence of plain cases, which are much more common and unproblematic. Hart's ambition was to strike a balance between those two extremes. He used the open texture theory, characterised by the distinction between the core and the penumbra, to argue that the law is neither entirely determinate nor entirely indeterminate. Instead, it is determinate in paradigm cases and indeterminate in penumbral ones [22: chapter VII, 10].

Quite similarly, prototype theorists, and cognitive linguists in general, take a middle-ground between two, more traditional, approaches to semantics. First and foremost, they oppose the approach called "objectivism", "rationalism" or "literalism", as typified by Katz and Fodor's semantic theory in linguistics and Frege-inspired formal semantics in analytic philosophy, best illustrated by the mind-as-a-computer metaphor. This approach supposedly holds that "all meaning is specifiable in sets of literal concepts and propositions that can apply directly to our given experience, and that reasoning is a rule-like activity that operates logically and linearly with these concepts" [24: 952, see also: 30: passim]. At the same time, cognitive linguists defy postmodern approaches to meaning referred to as "subjectivism" or "relativism". These approaches claim that there are no absolute foundations of thought and language, and that meaning is merely a product of social construction [24: 953, 27: 80–81]. Both "objectivism" and "subjectivism" are faces of semantic fundamentalism, the difference being that the former do it explicitly, while the latter only implicitly.²³ Cognitive linguists, on the other hand, defend a moderate position, claiming that meaning is both principled and flexible, universal and relative, objective and socially constructed at the same time [24: 958, 27: 80–81, 49: 7–12]. Prototype theory plays a vital role in this argument.²⁴

²³ Consider the striking similarities between the following passages by Hart and Johnson (a cognitive philosopher) respectively: "The rule-sceptic is sometimes a disappointed absolutist; he has found that rules are not all they would be in a formalist's heaven [...]. The sceptic's conception of what it is for a rule to exist, may thus be an unattainable ideal, and when he discovers that it is not attained by what are called rules, he expresses his disappointment by the denial that there are, or can be, any rules [22: 138–139]; "First, there are those who assume that, if there are no absolute foundations, then our only alternative is subjectivism and relativism, which they complacently embrace. They thus buy into objectivism's either/or view of knowledge and meaning. They implicitly accept the fundamentalist idea that the only knowledge there is must be based on absolute literal foundations" [24: 953].

²⁴ Note also that Johnson, to make his argument, uses the very example of "no vehicles in the park" rule [24: 958].

6 Conclusions and Caveats

The goal of this article was to examine apparent similarities between Hart's theory of open texture and the cognitive theory of prototypes. These similarities proved to be both significant and non-accidental. They are significant, because Hart's theory recognises all the basic characteristics of prototype theory, including well-documented prototypical effects (1–4), as well as the fundamental assumptions about the relation between linguistic and extralinguistic knowledge, and consequently the relevance of context for linguistic meaning (5). They are non-accidental, because they derive from a shared background of philosophical thought, namely that of the late Ludwig Wittgenstein, Friedrich Waismann, and John L. Austin, and they serve analogous meta-theoretical goals. These findings allow a conclusion that Hart's theory of open texture was an anticipation of prototype theory.

Nevertheless, there are certain caveats that have to be made. Generally, we should not forget that Hart was a legal theorist and he was primarily concerned with a theory of law, not a theory of language. His observations about the nature of language, as brilliant as they are, were based mostly on intuition and loose philosophical inspirations, not scientific research. He did not present a full-fledged semantic theory. In fact, to speak about open texture *theory* on the one hand and prototype *theory* on the other, as I have done here, is just a convenient terminological shortcut. Hart's remarks on meaning can hardly be compared to prototype theory, which is a well-researched theory of categorisation, developed by numerous specialists in several scientific disciplines. All this is not to diminish Hart's insights, but to foreclose unrealistic expectations by pointing out appropriate proportions. This is a general caveat that applies to all the following comments:

1. Hart believed that legal words are unlike ordinary words, and that the deficiencies of classical definitions are limited to legal terms only [20: 22]. Such a claim is obviously in contradiction with prototype theory, which identified similar problems with classical definition, without any relation to specifically legal concepts. In this regard, Hart's theory, as it is limited to legal language, is too restrictive.
2. The examples used by Hart may suggest that his theory applies only to general terms naming "*classes* of person, and *classes* of acts, things, and circumstances" [22: 124]. In other words, it supposedly applies to concepts denoted by nouns, like 'State', 'law', 'right', 'vehicle', etc. Prototype theory's primary focus was also on concepts denoted by nouns, but it was never limited to such. Numerous researchers have successfully utilised it to study the meaning of various word types, including adjectives, prepositions and verbs, and even categories of linguistic theory, such as phonemes, morphemes, clauses, syntactic constructions, speech acts, etc. [14: 4, 46]. Hart's theory then, taken literally, is once again too restrictive.
3. Hart insisted that open texture is a feature of any rule [22: 135], and even a necessary feature [22: 139]. The reason for this is that legal rules—notwithstanding precedents and customary law—are expressed in language, and all natural languages are irreducibly open-textured [22: 128]. This is an uncontroversial

statement if we adopt Waismann's sense of open texture. However, given its interpretation by Hart, namely as a lack of rigid boundaries of a category (vagueness), such a claim is not justified on the grounds of prototype theory. Vagueness is only one possible prototypical effect, and it is certainly not exhibited by all conceptual categories. Specifically, the presence of the typicality effect should not be equated with a lack of rigid boundaries of a category. In this regard, then, Hart's theory is too radical.

4. Hart wrote not only about the open texture of language, but also rules, verbally formulated rules, etc.[22: 124–153]. This has led some scholars to distinguish between the notion of the open texture of law as independent of the open texture of language. As a result, Brian Bix has interpreted Hart's idea as a policy argument for judicial discretion [4], while Frederick Schauer has interpreted it as a claim about the defeasibility of legal rules [42]. Such interpretations go beyond the scope of prototype theory and cannot be supported by it, at least not without further research. My effort was to show that Hart's theory can be interpreted solely on semantic grounds, which of course does not automatically undermine other possible interpretations.
5. Hart's theory of open texture (not to mention his general theory of law) has attracted a lot of attention from the academic world over the past fifty years and received more than a fair dose of critique. This is, of course, not the place to discuss the whole debate, which includes such big names as Lon Fuller and Ronald Dworkin. It must be noted, however, that some scholars have specifically challenged the semantic theory adopted (or presupposed) by Hart. I have ignored this sort of critique entirely, although not because I do not find it compelling or urgent. My intention was to compare Hart's open texture theory with prototype theory, not to evaluate it or defend it against theoretical charges, whether potential or already expressed. If my conclusion about the similarities between these theories is correct, however, then it may have an impact on the debate about the semantic aspects of Hart's theory.²⁵ Speaking metaphorically, in cognitive linguistics, Hart's theory gains a powerful ally on the semantic front.²⁶

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²⁵ For example, prototype theory addresses directly the problem of context-dependence of representativeness within a category that was raised by Lon Fuller in his powerful critique of "No Vehicle in the Park" rule [12: "Obviously, while many concepts have default values for prototypes and degree of membership and these are what are typically evoked in psychological experiments, both prototypes and membership gradients can be rearranged or otherwise changed with circumstances" [40: 99].

²⁶ In fact, the critique itself may serve as indirect proof of similarities between the theories in question. For instance, there is an ongoing debate about the relation between Hart's semantic theory and Hilary Putnam's semantic externalism. Some claim that Putnam's theory is an alternative to Hart's theory, while others defend the view that both these theories are compatible [see: 11]. Similar doubts concerning Putnam's semantics are discussed in prototype theory [see: 30: 112–115, 14: 13–14].

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