What is “paradigm”? 

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Abstract. Today, the word “paradigm” is being used with a vague definition. In this paper, an attempt at clarifying the meaning of the word “paradigm” is made, with reference to its philosophical roots and how it came to its proliferation of use.

1. Introduction

The last decades witnessed a proliferation of the use of the word “paradigm”, in connection with many subjects. But the question still runs unnoticed: What exactly is “paradigm? And where did it come from? This paper is an attempt to put together answers to these two questions.

The word surely escaped from the laboratory of philosophers, mostly due to the fact that its meaning is vague. Kuhn’s use of it as an inherited set of preconceptions, acting as a darkened glass from which we perceive the world, gave the word a mystic aura. Then it was only a natural consequence for everyone and anyone who are to make a claim in changing the way the world goes around to come about advocating their point of view as “the new paradigm” which gets rid of the “blinding effects of the previous one”! So the word’s popularity has grown in direct proportion to the watering down of its meaning, which was never exactly concrete to start with, and has grown thinner with every new use [7].

2. Etymology

Here are two definitions of paradigm, from two different dictionaries:

Paradigm 1. One that serves as a pattern or model.
2. A set or list of all the inflectional forms of a word or of one of its grammatical
categories: the paradigm of an irregular verb.
3. A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline. [1]

Paradigm 1. An example; a model; a pattern.
2. (Gram.) An example of a conjugation or declension, showing a word in all its different forms of inflection.
3. (Rhet.) An illustration, as by a parable or fable. [2]

From these definitions, we may assert that the words “model” and “pattern” goes well with the meaning of a paradigm, even the word “example”. Although this type of definition correlates the meanings of these words with the meaning of paradigm, it does not describe its meaning. The meaning in the domain of grammar studies seems also more or less well-established, being almost the same in the two dictionaries. The third ones are not even related. It also interesting that the third meaning given in the second definition makes the word ‘paradigm’ stand in close connection to ‘allegory’.

So the dictionaries fall short of being a source from which we can learn about the concept of “paradigm”.

An etymological analysis shows us that the word comes from the latin word ‘paradigma’, and appears in Greek as ‘paradeigma’, whose English translation is ‘example’, or as its earlier form ‘paradeiknuai’. The prefix ‘para-‘ meaning ‘alongside’, and ‘deiknuai’ meaning ‘to show,’ so the two words together sound as ‘alongside shown’ or ‘what shows itself beside’ [3]. But what is it that we “show alongside” or that “appears alongside”?

3. Paradigms, Plato and Aristotle

To answer the question, we need to observe the way the word ‘paradigm’ has been used, trying to extract its meaning from its usage. To do that, let’s first go back to Plato and Aristotle, since they seem to be the oldest sources elaborating on the concept of paradigm.

In his talk at EGS, Giorgio Agamben mentions the work of Victor Goldschmidt, *The Paradigm in Plato’s Dialectics*, published in 1947. From his account of the book, it’s understood that usage of the word ‘paradeigma’ in Plato’s book is peculiar, in the sense that sometimes the paradigm acts from sensible things to ideas, whereas sometimes it acts from ideas to the things. To quote Agamben, Goldschmidt makes the following analysis regarding Plato’s use of the word ‘paradeigma’:
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Goldschmidt shows that in the paradigm, the generality or the idea does not result from a logic consequence by means of induction from the exhaustive enumeration of the individual cases. Rather it is produced by the comparison by only one paradigm, one singular example, with the object or class that the paradigm will make intelligible.

Then Agamben continues with an attempt at giving an interpretation of the last section of Book VI of Plato’s The Republic [5], with regard to paradigms.

In *Rhetorics* [4] 1356b, Aristotle states that an example (‘paradigma’) is (a kind of) rhetorical counterpart of dialectic induction. Then in 1357b, he states regarding to ‘an example’:

Its relation to the proposition it supports is not that of part to whole, nor whole to part, nor whole to whole, but of part to part, or like to like.

This is to say that we have deduction which goes from the universal to the particular, induction (in its modern meaning) which goes from the particular to the universal, and we have the paradigm (example) going from particular to particular [3]. Then Aristotle goes on to say:

When two statements are of the same order, but one is more familiar (knowable) than the other, the former is an "example (Gr. paradeigma)."

What is interesting in this statement is that although he does not categorically distinguish between the participants of the ‘being an example’ relationship which he mentions to be a binary one, but he says that the relationship itself is anti-symmetric, and this anti-symmetry redeems one of the participants as being called ‘example’ or ‘paradigm.’ Furthermore, he says that the paradigm is more knowable than the other participant, but does not discuss this issue any further.

4. Paradigm as Example

Before we proceed, we must deal with and close this issue of ‘paradigm’ meaning ‘example’. Agamben states in his talk, which is mostly on paradigm taken as an example, that philosophy very rarely refers to the problems of paradigm and analogy.

Following Goldschmidt, Agamben mentions the example being the typical element of a set, but not exactly by using the word typical. Thus we can’t be sure if he thought about a paradigm being a template for a class, with reference to the use of the word ‘template’ in knowledge management, but the relationship seems proper. Then he continues to state in a brilliant way, although the example provides the context for the understanding of the elements of a set, it is actually not a part of the set:

This is the paradoxical status of the example. What an example shows is its belonging to a class, but for this very reason, it steps out of this class at the
very moment in which it exhibits and defines it. Showing its belonging to a
class, it steps out from it and is excluded. So, does the rule (that functionally
define the set, he means) apply to the example? It’s very difficult to answer.
The answer is not easy since the rule applies to the example only as a normal
case and not as an example. The example is excluded from the normal case
not because it does not belong to it but because it exhibits its own belonging
to it.

Thus he comes to say that the typical element of a set has two distinct semantic
stances: one as being the example and one as being an element of the set. These two,
he emphasizes, should not be confused for one other.

To give an example to this notion of paradigm being an example, and how the
conception of paradigms might differ from person to person, think of the most typical
kind of cheese for you. I guess many of us, in some point of our lives, have been
confronted by a kind of an edible substance which was claimed to be a kind of
“cheese” as well, yet was out of our conception of cheese, that is our conception of
typical cheese and the class generated by it. It’s only more astonishing to see that this
imaginary conception of the typical cheese kind gets twisted to include the new kind
of cheese if we like it and choose to regard it as “cheese”, and each person has his/her
conception of what is cheese, a personal cheese paradigm. The cheese paradigm is
what we use to define the class, but it, as itself, isn’t necessarily an element of it. This
human dependency of the “paradigm” appears as a recurrent theme, sometimes even
regarded as the intangible aspects of it.

Kant also recognizes this typicality of the paradigmatic example, but he describes
it as being secondary and dangerous as a means in understanding the rule that the
example is to stand for. The very next passage is taken from The Critique of Pure
Reason [6]:

Indeed, the grand and only use of examples, is to sharpen the judgement. For
as regards the correctness and precision of the insight of the understanding,
examples are commonly injurious rather than otherwise, because, as casus in
termis they seldom adequately fulfill the conditions of the rule. Besides,
they often weaken the power of our understanding to apprehend rules or
laws in their universality, independently of particular circumstances of
experience; and hence, accustom us to employ them more as formulae than
as principles. Examples are thus the go-cart of the judgement, which he who
is naturally deficient in that faculty cannot afford to dispense with.

The usage of the word in grammar is also related to the paradigm being an
element. Kuhn, when discussing the meaning of the word paradigm, describes it in a
very intelligible and concise way:
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In grammar, for example, ‘amo, amas, amat’ is a paradigm because it displays the pattern to be used in conjugating a large number of other Latin words, e.g., in producing ‘laudo, laudas, laudat.’

5. Contemporary Meaning

Michel Foucault and Thomas Kuhn appears to be the two prominent figures in the 20th century that caused an ever-since increasing attention to the word ‘paradigm’.

Agamben reports, in his talk in EGS, that Foucault uses the word ‘paradigm’ in his writings, never defining it. In the same talk, he uses Foucault’s panopticon (the discussion which I tracked from other resources to be in [15]) to illustrate Foucault’s meaning in his use of ‘paradigm’:

So, the panopticon is a concrete, singular, historical phenomenon, but for Foucault at the same time the panopticon is, as he writes, "panoptism". That is so say, a model of functioning which can be generalized, which allows the definition and establishment of new sets in the relationship between power and the everyday life of man. From this point of view the panopticon is no more simply a dreamlike building but also the diagram of a mechanism of power in its ideal form. This means that the panopticon functions as a paradigm, as an example which defines the intelligibility of the set to which it belongs and at the same time which it constitutes.

Kuhn’s use of the word paradigm, and definitions made by several other researchers seems to have determined its current major meaning. Kuhn attempts at explaining his use of the word paradigm in the first pages of his book [8] (1962). He first describes two characteristics of specific achievements: being “sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity” and being “sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve.” Then he states the following:

Achievements that share these two characteristics I shall henceforth refer to as ‘paradigms,’ a term that relates closely to ‘normal science.’ By choosing it, I mean to suggest that some accepted examples of actual scientific practice –examples which include law, theory, application, and instrumentation together– provide models from which spring particular coherent traditions of scientific research. … Men whose research is based on shared paradigms are committed to the same rules and standards for scientific practice.
Thus, as Kuhn himself writes, his use of the word paradigm is in order to relate to the exemplary notion of the word ‘paradigm’: what he calls ‘paradigms’ in science, are just the category describing/constructing typical singularities in the ways of practicing science, in the respect of the meaning of the word as ‘example’ that was discussed in the previous section. Since everybody has a personal way of practicing science, these examples that Kuhn calls paradigms are paradigms (examples) that define categories over this set of personal attitudes towards science, by being typical elements of these categories. This is also shown by his proposal for the usage of the word “examplar” instead of paradigm in his latter works. In the third section, Kuhn discusses the nature of the paradigm in two paragraphs (pp. 23 in second ed.), and says that the paradigms are interchangable with what they exemplify, meaning that the category elements that the paradigm distinguishes might become the paradigm and the paradigm may become an ordinary element without any effect. In this aspect, Kuhn seems to miss the knowability of a paradigm and the discussion of the paradigm’s belonging to the class it defines described in the previous section. It must also be said that Kuhn never tries to define the word ‘paradigm’ itself, but only explains how he is going to be using the word. Thus what Kuhn has attempted in using the word ‘paradigm’ is not in order to define a meaning for it at all, but used the word frequently and almost freely in a particular context, and his works’ popularity binded the word with only one of its specific philosophical application.

It’s also interesting that while Kuhn’s and Foucault’s use of the word paradigm is similar in meaning, as seen from the discussion above, Agamben reports that Foucault seem to “avoid” the work of Kuhn and the word paradigm, and speculates on the reasons which he says might be personal.

Here are some more definitions of the word paradigm, which follow along similar lines with Kuhn’s discussion of history of science:

A paradigm is a fundamental image of the subject matter within a science. It serves to define what should be studied, what questions should be asked, and what rules should be followed in interpreting the answers obtained. The paradigm is the broadest unit of consensus within a science and serves to differentiate one scientific community (or sub-community) from another. It subsumes, defines and interrelates the exemplars, theories, and methods and tools that exist within it. [9] (1975)

A paradigm is the specific collection of questions, viewpoints and models that define how the authors, publishers, and theorists, who subscribe to that paradigm, view and approach the science. [10] (1990)

There also seems to be another thread of definitions that have stemmed from Kuhn’s definition, generalizing the meaning of the word towards “what we observe
the world through.” Here are three definitions in chronological order of being made, which I believe shows a semantic evolution around the word [11]:

…the basic way of perceiving, thinking, valuing, and doing associated with a particular vision of reality... [12] (1970)

A set of rules and regulations (written or unwritten) that does two things:

1. it establishes or defines boundaries; and
2. it tells you how to behave inside those boundaries in order to be successful. [13] (1992)

A constellation of concepts, values, perceptions and practices shared by a community, which forms a particular vision of reality that is the basis of the way a community organizes itself. [14] (1996)

It must be pointed out that there was no decision for inclusion of these definitions into the paper, on any grounds. That is to say that these definitions are not here because they are good definitions or because their authors are credible authorities what so ever, but these are the complete list of rare citable definitions that the author of this paper could compile. Thus being an opponent or a supporter of any of the ideas that the authors of these quoted definitions put forward is simply irrelevant to the discussion.

An interesting question is how the ‘paradigm’ come to mean ‘a model’. At first, when I started investigating the issue, I thought that the answer most probably lied in its being implied both in Foucault’s and Kuhn’s work. To give an example, in the works of Foucault, the panopticon of Jeremy Bentham, which is an architectural surveillance machine, not only serves as an historical artifact, but also as the a paradigmatic structure, an architectural “model” which also can be used for understanding power relations [15]. So one can conjure similarities between various parts of the panopticon and a power structure to analyze it, which implies the panopticon as a model as well. In Kuhn’s work, the paradigm includes the meta-model of the representation tools and models of the subject matter used by a specific scientific community, and the paradigm easily gets confused to be this meta-model, which is actually a part of it from a Kuhnian perspective. But for this confusion, the readers of his book are not the only ones to blame, since at one point he gives the definition of paradigm as follows:

In its established usage, a paradigm is an accepted model or pattern, and that aspect of its meaning has enabled me, lacking a better word, to appropriate ‘paradigm’ here. (pp. 23, second ed.)

Thus paradigm being a model seems to have appeared before Kuhn. When and how is still an open question for me. This discussion needs to be supported an investigation into what a model is as well.
Taking the cheese paradigm example also into account, one observation is that some things that we perceive as paradigms have the properties of a model, but some paradigms do not. What is similar and different between these two notions of paradigm is a question that should be addressed, and also how they relate to each other. This might lead to a model of multi-paradigm structures.

6. Paradigm, Ontology and Epistemology

Whether we confine ourselves to the meaning of the word paradigm as a model or not, two subjects of philosophy are related to it: epistemology and ontology. It must also be added that epistemology and ontology themselves are related as well.

Many definitions for ontology exist. An exemplar of one category of definitions is the theory or the study of objects and their relationships. Although this definition seems very intuitive and easy to grasp, it’s flawed in its drawing onto an ontological assumption of objects being present. An operational definition that does not refer to objects is that an ontology is a specification of a conceptualization [15]. The fact that this definition also needs to be coupled by the definition of conceptualization makes it clear that defining what is ontology is a very hard task. The ontology seems to be the answer to this question: what is out there?

The question of what is out there can obviously be answered by a specification, which depends on the observer with respect to whom “out there” is defined, and the ontology-maker who constructs the specification. Philosophers take this question as being about what exists in the one and only universe that also includes the observer and the ontology-maker, and hence become chilled by references to multiple ontologies, which is a very common expression especially in Artificial Intelligence in which an ontology bases upon what can be representable. But one should also observe that when this concept of what is representable gets applied not to a system but a human, it derives the philosophical point of view, and “an” ontology becomes one attempt at representing “the” ontology.

Whether it’s “the” ontology or “an” ontology, the truth or fidelity of such a representation, and its knowability, is the subject of yet another branch of philosophy which studies knowledge: epistemology. It attempts to answer the basic question: what distinguishes true (adequate) knowledge from false (inadequate) knowledge?

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1 It was Michael Biggs, who was in University of Hertfordshire, UK at the time this paper was written, who pointed to this “chilling effect” as a feedback for one of the authors’ presentation in CEPHAD’04 conference, Bornholm, Denmark.
Having mentioned the ontology and epistemology, now we may turn back to the question of the relation between the paradigm and the ontology and epistemology. First of all, if ‘paradigm’ is also something out there, it’s definitely a part of ontology in philosophical sense, and an assessment of how much we can know about it would depend on the epistemological stance we might take. If it is a class formation operator, defining a class by being the typical example, then paradigmatic relationships should also be parts of ontologies, whether “an” or “the”, and should be studied just as much as ‘part-of’ and ‘kind-of’ relationships gets studied. How the paradigm relates to our ability to relate to “adequate” knowledge is another open question.

7. Conclusion

We are using the word paradigm without being aware of what we mean. In this paper I presented an investigation into the history of the word ‘paradigm’ s meaning, and its philosophical context.

All of the meanings of the word ‘paradigm’ that appeared in time relate to being a typical example. Probably the farthest away from this meaning is its meaning as a model or pattern, which requires further investigation. The popularity of Kuhn’s work seemed to redefine the word to one of its particular possible application in a specific context, alienating the word to its meaning ‘example’.

As further research direction, Kant’s schemata theory and the studies related to style and genre seem to be candidates for expanding this discussion.

References

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