Can we speak of virtual natural kinds?

Laurentiu Staicu

University of Bucharest

My talk today will be about taxonomy and about the way we classify things. More precisely, I will discuss, on the one hand, about the way we elaborate our taxonomies in what we used to call (despite Plato's warning), "the real world", which is the world in which we breath and walk, and, on the other hand, in the virtual world of the Internet. Now, usually, taxonomy is a boring subject, it's all about classes, types, hierarchies and so on. But sometimes, we come to realize that as boring as it is, it plays a crucial role in shaping the way we see the world around us. This was more obvious than ever with the debate that took place last summer (and it's still going on strong) between the leading astronomers of the world concerning the definition of a planet. That was indeed a very busy and exciting summer for astronomers! As we know from the news, on August 24 2006, a session of the International Astronomical Union General Assembly in Prague passed a resolution re-defining the planets of our solar system. Only 428 of the IAU's nearly 10,000 members were involved in the vote, the news says[1]. The participants proposed a new definition for a planet. According to this proposal, a planet is a celestial body which satisfy three main conditions: the object must be in orbit around a star, but must not itself be a star, it must have enough mass for the body's own gravity to pull it into a nearly spherical shape, and it must clear its orbit of other objects. Now, these three conditions are easily satisfied by the bigger planets in our solar system, but not as easily by the rest of them, the smallest planets such as Pluto. In fact, according to the voted definition of a planet, Pluto is no longer a planet! So, now there are only eight real planets in our Solar System. But not to worry, this is not final! Only a week after the IAU's decision stripped Pluto of its status as a full-fledged planet of the Solar System, some "rebel" astronomers started a campaign with the objective of restoring Pluto's planetary status. They wrote a petition which was already signed by more than 300 professional researchers and which attacks the IAU's decision. Their protest can be read on the Web. One of the petition supporters said that the number of those who voted in Prague is not enough for such an important decision. The IAU assigned Pluto and other large objects to a new category - "dwarf planet."

1 For some details about the meeting see, for example, the following: http://news.bbc.co.uk/2/hi/in_depth/5282440.stm

So, the astronomical taxonomy has changed suddenly, by voting. As I said, the debate is not over yet, maybe the "rebels" will succeed to restore the planetary status to Pluto, maybe they won't. But that's not the issue I want to discuss now. I brought this example into discussion because I think it shows us very well two things: first, how fragile can be sometimes the scientific taxonomy and, for that matter, any other taxonomy, and secondly, what a decisive role it plays in shaping our images of the world around us.

Now, in talking about scientific taxonomy we are also talking, implicitly, about natural kinds. And that's because more often than not scientific taxonomies comprises natural kinds of events, substances, particles or things. In the last decades, the debate over the status of natural kinds gained a significant impetus in the philosophical circles. The reason is quite simple: natural kinds play a key role in the network of scientific explanations. After all, scientific generalizations and laws are not about individual things directly, they are about kinds of things that we find in nature, they are about natural kinds of things. But then the question arise: what is a natural kind? This question received many answers. I won't follow the details of these answers because this is not what I intend to discuss, but I will sketch a brief taxonomy of the most important answers offered. In a first wave of the debate, the answers oscillated between a radical nominalism (natural kinds are just conventional classes which are made according to our epistemic and practical interests) and a radical realism (natural kinds are natural classes of things which we find as such in nature). Thereafter, the positions taken in the debate over the status of natural kinds became more gradate and, as it always happens in such difficult cases, some more reasonable answers have been formulated. One of the most reasonable of these maintained that natural kinds are dependent upon the natural properties of things, properties which exists as such in nature, but are well-chosen by us according to our epistemic or practical interests. In this respect, a very interesting case, which revived the debate over the status of natural kinds is that of biological species. The theory of evolution, maybe the most important biological theory, as it is considered by many biologists and philosophers of biology, is about species. But, again, the question arise: what is a biological species? Is it a natural kind in the realistic sense?[2] Or is it a class of individuals which we put together in a certain way according to our explanatory interests? Well, the debate is not over and, probably, won't be over soon. The case of Pluto, which I brought into discussion earlier, probably will give a new stimulus to this debate over the ontological status of natural kinds. Now, as I see it, the main difficulty in this debate is not attached to the term "kind". This is not a questionable term. We could all agree that the term "kind" means "class" or "type", etc. The difficulty arises once we ask what do we mean by "natural". For the common individual, which is unaware of philosophical sophistry and arguments, "natural" means what is out there, in nature, what

2 For a clear exposition of the debate over the relation between biological species and natural kinds see the monumental work of Alexander Rosenberg, *The Structure of Biological Science*, Cambridge University Press, 1985, 185-225.

exists independently of us, humans[3]. On the other part, for those who read Kant at least, "natural" could no longer have this meaning, "natural" is only that which gets through the filter of our sensibility or our senses. In other words, "natural" is only that which we can perceive. Further more, for those who also read Wittgenstein, "natural" means that which bear, in a way or another, the mark of our language or, more precisely, that which enter between the boundaries of our language: a natural kind is a class of individuals which could be talked about in language, to which we could give a name and a definition[4]. There are, of course, those who also read beyond Wittgenstein, for which "natural" means that which is built up and configured according to our cultural norms, or the opinions of the elites from a certain epoch and so on. What I want to say with this is that today, the word "natural" has no longer a clear meaning, at least in the philosophical circles. Once we abandoned the characteristic belief of the robust metaphysical realism, according to which things and entities in nature have real essences, which could be discovered by us during the cumulative process of scientific research, we have big problems in finding something which allow us to speak of "natural" in the sense of "unaffected by humans". And so, it seems all we can do is to accept that unavoidable relativism and to abandon the sophisticated debates over the ontological status of entities such as natural kinds, events, properties, causal powers and so on. In the case of natural kinds, for example, from the relativistic point of view, if our explanatory interests and, of course, practical interests, require us to speak about the class of mammals as being a natural kind, we can do this without asking ourselves if mammals are *really* a natural kind or not. Maybe tomorrow we will change our attitude and we will abandon the natural kind of mammals, again, if our interests will require this or if the members of the biological science's elite will reach a consensus in that direction. It seems to me that this position finds itself a very well-articulated expression in Richard Rorty's writings, and this is perhaps one of the reasons for which Rorty is loved and hated by some many people in the same time[5].

But even if this relativism might seem very appealing (first of all, if we embrace it we could get rid in a single move, of so many philosophical nightmares!), I think we cannot afford to adopt it as such. In this respect, the case of the definition of a planet comes again on stage. Can we continue to consider Pluto a planet because we used to do that for quite a time now? Or because the camp of those who maintain that it is a planet is

3 This position is often called "naïve realism" a label which, although without intention, makes a huge injustice to the long tradition of metaphysical realism which is associated with it. The arguments for metaphysical realism may be wrong, but not naïve, in any sense of the word.

4 For an interesting perspective on Wittgenstein's perspective concerning the world's *substratum*, see Ian Proops, 'Wittgenstein on the Substance of the World', *European Journal of Philosophy*, 12, 1, 2004, 106-126.

5 For a very clear and concise exposition of Rorty's position concerning the realism/relativism debate see, for example, Richard Rorty, 'Putnam and the relativist Menace', *The Journal of Philosophy*, Vol. XC, 9, 443-461.

bigger than the camp of their opponents? And inversely, can we accept not to consider it a planet because 428 astronomers decided during an official meeting that it is not a planet? I think the answer is no in both cases. And so, what can we do or, more precisely, how are we supposed to put an end to this debate over the status of Pluto or any other similar taxonomical debate? We need a basis, a natural ground for anchoring the definition which concern us, be it the definition of a planet or of something else. And so, we get back to the meaning of the term "natural". But, as I said earlier, it is very difficult to give a precise meaning to this term. I suppose that anyone who followed quite a bit the debate over the status of natural kinds from the last decades or so could say clearly enough that the stake in this debate is precisely the meaning of the term "natural" and the assignation of an invariant definition to it. And that's because, even if we could no longer speak of the "natural" in the sense of that which can be found out there, unaffected by us, it is equally impossible to accept that "natural" means whatever we want it to mean, or whatever the cultural or scientifical elites elects it to mean or whatever serves better our present interests and goals. No, we want to reach a definition which could avoid, on the one hand, the commitments to our (human) point of view, and on the other hand to avoid the claim of miraculously surpassing this point of view through a direct perception of what could be found out there, in nature, without reference to our point of view. But how can we do this? Well, I really don't know the answer to this question ! But in the following I will try to show that we could find new ways of searching a reasonable answer to this question by simply comparing, from the point of view of taxonomy, the two worlds above-mentioned: the real world around us, and the virtual world of the Internet.

I would like to start this comparison by asking what do we mean by "natural" in regard to what could be called "the brave new world of the Internet" that world in which we all live or, to put it mildly, to which we all participate, willingly or not, for quite a time now? More precisely, how do we discern between natural and artificial or conventional, etc., in this new cave which is the Internet? Obviously, an old-fashioned realist would say that this question is plainly absurd or, more politely, that it is a question which does not arise because the Internet is completely a virtual world which means artificial. It is just a human construction, a complicated sequence of 1's and 0's, nothing natural. But then he would have to define what's "natural" and, as I said before, there seems to be no simple definition for this term. After all, for all we know, it could be that the nature around us or the "real world" is nothing more than a complicated sequence of elementary particles which we cannot observe directly not even with the most sophisticated apparatus[6]. Now, leaving aside the reductionist question of the ultimate bricks from which the real world or the virtual world of the Internet are constructed and the analogy between them, the old-fashioned realist could continue by saying that the difference between the real world

6 A good (and entertaining!) introduction to the 'bestiary' of subatomic particles is John Gribbin's book In Search of SUSY, Supersymmetry and the Theory of Everything, Penguin Books, 1998.

of Nature and the virtual world of the Internet lies in the fact that we cannot perceive things on the Internet as we perceive things in the real world. And he would be right, of course. We cannot touch the sword masterfully handled by a the character from an online game which we play on the Internet, we can only see it on the screen. But there are many things in the so-called real world that we cannot touch, for example we cannot touch the Pole Star, we can only see it. Yes, the realist would say, but in the case of the Internet we know that those things we cannot touch but only see are made by us, a clever programmer made a certain sequence of 1's and 0's which in our eyes appears as a shinny sword in the hand of a legendary hero. But the Polar Star was not made by us, even if we can observe it only through the lens of a telescope without being able to touch it. This is again true. But it is not sufficient: an optical illusion, for example, is not something made by us, and despite that, it is something artificial, at least in the sense that it is not what it appears to be. And the rabbit hole goes deeper and deeper, to borrow an expression of Morpheus, the famous character from the equally famous movie The Matrix. In other words, this imaginary discussion with an equally imaginary realist could continue.

But I won't continue it because I believe that the realist just said something very interesting for what I want to maintain in the following. He said that the virtual world of the Internet is a world made by us. More important still is the fact that it was created by us to serve certain goals and objectives. And these goals and objectives are highlighted precisely by the way in which we constructed the virtual taxonomies which populate the Internet and by the way in which these taxonomies are evolving in time, in proportion as the Internet is growing and acquire new levels. Now, as anyone knows, at least anyone who navigated on the Internet at least once, the Internet is inhabited by many things: sites, blogs, portals, virtual organizations, virtual shops, images, texts, maps, games, etc. All these entities are forming together a network, very similar with the network which compounds the real world, even if it is much, much poorer than this one. But from the point of view of taxonomy, the difference is just a difference in grade. New types of virtual entities are appearing every year, in proportion as our needs of virtual representation, of communication and of storing information are growing, on the one hand, and on the other hand the programming capacity of computers expands. But how are assorted and classified all these different types of entities? The search engines, for example, offers a pre-established scheme for searching: the Yahoo search engine, for example, offers a pre-established classification for our searches after cars, finances, games, groups, maps, jobs, sports, images, news, and so on. If I write my name in the search box and I hit the search button for images, I will probably find images of myself or photographs made by me and displayed on the Internet. If I write my name and I hit the search button for news, most likely I won't find any entries because I don't remember doing something as important as to be displayed in the Yahoo news

category! And again, if I write my name and I hit the search button for groups, most likely I will find the discussions groups to which I subscribed. These pre-established categories channels the search in a certain direction. That's why it's very important to know precisely in which category falls what are we looking for because, as the Internet fans are saying, you can find anything on the web as long as you know where and how to search. But are these categories artificially formulated or defined? In other words, are the virtual taxonomies which configures the Internet conventionally made, following our epistemic and practical interests? I think the answer is in the same time yes and no. It's clear enough that these categories are defined in such a way as to respond to our needs, which is to facilitate our searching on the web: if you are interested by images, it's much more easier to search in a category which contains only images. Because the Internet was created, as I said earlier, for certain purposes. It is a user-centered world, more precisely a world centered on the user's interests, goals, and perspectives. For example, one of the main functions of the Internet is that of offering a very fast and easy to use way of searching information. That's why all the search engines are competing with each other trying to offer more analytical and more flexible taxonomies every year, to facilitate our searches. And this is a very a tough competition! Now, given this goal of searching after relevant information, and given the diversity of the information which could be of interest for the users, it is reasonable (which means natural) to have a separate category for news and a separate category for cars or matrimonials, although the advertisements for selling cars could be also considered in a way, news. It would be unreasonable (which means unnatural) to find matrimonials in the news category! Furthermore, the virtual taxonomies are evolving together with the virtual world which they organize. When the users' interests are getting more and more sophisticated, crossing taxonomies are appearing, you can search for news with or without images, you can search for matrimonials with or without images (without images would be, of course, unwise!) and so on. All these taxonomies, which evolves according to the users' interests, are trying to be as *natural* as they could be. But in which sense do we use the word *natural* here? This question could arouse, of course, very deep suspicions and resistances and could make us to raise our eyebrow in distrust because it seems very odd to speak of something natural in the virtual world of the Internet. But if we rephrase the question the suspicions could diminish. We could ask, for example the following: is it natural to distinguish, in the categories displayed by a search engine, between news and matrimonials? I think the answer is yes. Because the information which we could find in the news category are of a different nature than the information which we could find in the matrimonials category. So we can consider that these two categories are making two separate natural kinds. Of course, virtual natural kinds. Now we can ask who decides this or, more precisely, which is the criterion according to which we establish the border between these two categories or, as I dared to baptize them, these

two virtual natural kinds? I think the answer is clear enough: the criterion is given by the interests of the users. These interests are, of course, subjective, they fluctuate, they change and vary in time but they give birth to some *natural* classifications which fluctuate accordingly. It is clear that these virtual natural kinds are not natural kinds in any realistic sense. Because the interests of the users cannot be considered properly real essences which could give birth to some natural kinds as an old-fashioned realist would want. The virtual classifications are strongly attached to the interests of the users. If these interests are changing, so are the virtual classifications, the categories of the virtual world of the Internet. There is nothing stable once and for all here, this is why I said that the interests of the users are not real essences and accordingly the virtual taxonomies which try to satisfy these interests are not virtual natural kinds in the way a realist would want them to be. Nonetheless, this is not something to be worried about. As I said at the beginning of this talk, as long as we no longer have too many reasons to believe that we will be able at some point to find such real essences not even in the real world, we have less reasons to believe this when we talk about a virtual world as the Internet. But despite all these, in this virtual world we still need to distinguish between natural and artificial. And we do this by formulating virtual natural kinds. They aren't natural in the sense that they are not affected by human intervention because they are in fact constructed by us. But this aspect is irrelevant now. In a world artificially created, which means a world without real essences, there is no use in talking about something unaffected by human intervention.

With this conclusion in mind, let's go back to what we call the real world. In contrast with the virtual world of the Internet, the real world is not constructed according to our interests or the interests of the user. Although this perspective was indeed maintained times and often, I think it is too selfish to be endorsed. Now, if we keep this analogy with the Internet, we must say that in the real world, in contrast with the virtual world in which we entered recently with the advance of computers technology, there isn't just one type of user, but many types. The Internet is used only by humans, but the real world is *used*, so to speak, by many other types of users. If by users we understand living beings, which interacts with the environment around them, and which follow their own goals and purposes, then we can say that the real world comprises a big variety of users. There are humans, of course, but there are felines, birds, fish, insects and so on. And all these users have their own specific interests. We don't have too many reasons to believe that in this entanglement of specific interests and types of users, the interests of a single type of user are prevailing, namely the human type. So we cannot pretend that our taxonomies are the *real* ones. But neither could we relax with the conclusion that we can formulate whatever taxonomies we want or serve for the best to our present interests and believe that they are the real ones. Because, as I said, in the real world there isn't only one type of user and one set of interests, as in the case of the Internet. From this point of view,

the Internet is a simple and wonderful world: it is a virtual network in which humans are interacting with one another and follow their own goals and purposes, individually or collectively. But those who interact are only humans. Their interests are entering, broadly, in the same categories, so the virtual taxonomies are relatively easy to construct. As I said earlier, on the Internet it is natural to distinguish between matrimonials and news. We don't have to bother much with subtle details and questions. But in the real world, we interact with many other types of users which have their own specific interests. And which see the world through specific *lenses* according to their interests. Even if the taxonomies which they use for seeing the world around them are not constructed consciously or reflectively as ours, they still see the world through the lenses of their own classifications. And their taxonomies or classifications are changing in time also, as ours. Probably, for the prehistorical felines the first humans were a dangerous kind, which should be avoided as a threat. But in time, after the humans domesticate them, the situation has changed. Our cats are no longer avoiding us, but on the contrary. Today we started to realize that in the real world there are many different categories of users, which have their own specific interests and which see the world according to these interests. But for a long period of time we ignored this aspect. We made our own classifications, we divided the world in natural kinds according to our own interests and we also found some justifications for acting this selfish. The humans are the only knowing subject, we used to say and we are still saying, the only being gifted by God with the right to rule the world, etc. But the result of this attitude was catastrophic. And this is in no way a surprise. If we see the animals which inhabits the natural world around us as being part only of such categories as "predators", "eatable" or "uneatable", "harmless", and so on, it's obvious that in a long period of time we will play a decisive role in the extinction of numerous species of animals or we'll determine major perturbations of the natural equilibrium. This is just another example of how important are the taxonomies which we construct, not only for the way we see the world around us, but also for the way we come to act in it.

So, we could say that for a long time we constructed the taxonomies for the real world as we construct now the taxonomies for the Internet, which is mainly according to our interests. In the case of virtual taxonomies, which are shaping the virtual world of the Internet this is something natural, useful and efficient. We are the only users and the virtual natural kinds in which we divide this virtual world are answering very well to our needs and interests of communication. But in the real world this strategy is not as good or, at least, gives birth to many difficulties. We cannot ignore the fact that in the real world we are not the only users! So, in this case, what can we do?

Well, for the start, maybe it would be wise to put aside the search for a definition for the natural kinds in the stronger realistic sense, and try to do with just a definition for what could be called the human natural kinds. Then we could start to pay more attention to the natural kinds in which divide the world the other living beings around us, the other users

which inhabit this network which we used to call "the real world". And, finally, maybe it would be wise to search the intersections of these different taxonomies. Because it is possible that these intersections could give us the invariant definition which we search and need for the term "natural". In other words, these three steps briefly sketched here could be compressed to a single one huge leap: to abandon the search for real essences for good, both in the philosophical realm, where we done that directly for so many centuries, and in the realm of natural science, where we search for the ultimate bricks of the Universe which is, I think, just a disguised name for the old philosophical search for real essences. And rather to search after the common denominators, the intersections of the taxonomies used by the users which inhabit the real world.

After all, as Plato would probably tell us, real essences cannot be find in this world, in the cave. But despite this warning, we still live in this world and we need to divide it in natural kinds or classes of things to be able to manage and reach our goals and purposes, or to be able to survive as a species, as Darwin would put it. In many ways, this world is a different world that the virtual world of the Internet, this new cave that we constructed ourselves, a cave where, as I said, there is only one single type or kind of user. As long as the cats, for example, doesn't navigate on the Internet, we can be assured that the Internet is populated indeed by those virtual natural kinds that are answering the best to our needs and interests and that these kinds are well established. In other ways, the real world is not so different from the virtual one. Because, even if in the real world there are many types or kinds of users, all these users are dividing the world around them, consciously or just instinctively, in classes and natural kinds according to their interests. And these interests cannot be classified according to a unique scale. We cannot give them different values according to an ideal classification in which human interests are at the top. We cannot believe anymore in a world of ideas which could give us the model for classifying the things around us. And in this respect we have to say Plato farewell.

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