

Some notes on Dretske's article "Meaningful Perception".

NOTE: Numbers inside brackets denote page numbers of "Meaningful Perception" in the edition quoted at the end.

Pedro Fonseca, 99.12.06
tiopita@netcabo.pt

Outline:

Due to several developments in cognitive sciences we have learned to see perception as a highly complex process of categorization and recognition. It has become a commonplace to say that what appears to us, although it may seem to have an almost direct and unmediated appearance, is in fact the fruit of a long and elaborate set of cognitive processes (see Dennett 1991, for instance).¹ On his article "Meaningful Perception" Dretske counters this current opinion by establishing a distinction between two kinds of perception: perception of facts and perception of objects. He then argues that, although perception of facts (*meaningful perception*) does indeed require "conceptual skills [like memory and categorization] needed to classify and sort perceptual objects" (332), the same does not happen with perception of objects (*sense perception*) that may even be considered as "direct and unmediated" (338). Of course, because perception of objects, in this sense, does not imply any form of recognition, it follows that "One can perceive an object without knowing or understanding what it is." (332) This raises certain difficulties because, although it is quite straightforward to imagine seeing an object unrecognising nearly all facts about it (there are trillions of facts about any mushroom), it is much more difficult to imagine seeing an object unrecognising *every* fact about it. It is to the point that Dretske does not give any example of this.²

¹ Dretske of course acknowledges this when he call this position the "(more or less) orthodox position in the last forty years." (342) Or by acknowledging that what he calls "meaningful perception" might be called "cognitive perception" due to the widespread consensus of seeing perception as recognition. For a recent defence of this "constructive" view see for instance the article on *The Oxford Companion to the Mind*, "Perception". Neuroscience textbooks offer similar approaches: "This [sensorial] processing can be described as filtering, abstracting, and integrating" *Biological Psychology*, p.190. In general we could perhaps say that in neuroscience perception *is* recognition.

² The mushroom or the cat examples are quite inappropriate in this respect. To see a mushroom in a jungle we must distinguish it at least from the floor. Which already demands quite heavy processing skills (such as we can see from computer recognition programs). To mistake a cat by a sweater we also need to do a lot of recognising: lines, shapes, distance, resting on the sofa, certain relative size, being indoors, etc. And we also need to have a lot of knowledge about the world, we need to know that sweaters do exist, etc. Anagnosia also falls in this respect, "the man who mistook his wife for a hat" nevertheless recognised her as a hat. The fact that he misrecognised her is of no import since what we are trying to figure is some example where perception can be made without a single instance of cognitive (mis)recognition.

In the following lines we will try to point out some of the virtues and problems associated with Dretske view, and also to identify the main problem. We will start by presenting Dretske distinction in its most plausible form, as related to kinds of perceptive structures in the brain and the way they process information. Next we are going to regard the clarifications it may introduce in the discussion of Representational *versus* Direct Realism; and finally we will discuss some difficulties that derive from having framed sense perception in terms that do not imply any form of recognisance.

In how many ways does the brain see things?

A good way, perhaps, of expounding Drestke’s article is by delineating some of the *processing* properties he attributes to sense and meaning perception in the case of vision.

Perception	
Sense Perception / Perception of Objects	Meaningful Perception/Perception of Facts
May be necessary to meaningful perception. (334)	Not necessary to sense perception. (334)
More elementary perceptual processes. Involving the first stages of the visual system, those, for instance, that remain operational in cases of agnosia (334).	Demands cognitive processes like <i>categorization</i> – “perceiving that one thing is, in certain respects, the same as another.” (332) – “ <i>memory and conception</i> ” (333).
Because we don’t know “the nature of sense representations” we can’t tell which processes in the brain allow it. However we can say that the more basic processing (which occur, for instance, in the retina or in the earlier parts of the visual channel) at least “exhibit fewer marks of intelligence”. (345)	Demands “the cooperation of the entire cognitive system”. It is surely a top-down process in which “some form of constructionism” is inevitable. It works in a way that is not modular. (344) (So it seems straightforward to say that they are massively parallel.)

According to Dretske, discussions about several confronting models of perception can be clarified once we understand the difference between sense and meaningful perception:

“As we shall see, debates about whether perceptual processes are top-down or bottom-up, about whether they are inferential or constructive in character, about whether they are massive parallel or sequential, and about their comparative modularity, are topics that can be given sharper focus by distinguishing the kind of perception – sensory or meaningful – the debate is a debate about.” (334)

Dretske starts by distinguishing (the orthodox) computational and constructivist models of vision from Gibbs’ “direct theory of perceptual processing.” (341-2) The first starts by admitting that the exterior stimulus, the input of perception (light rays that enter our eyes, for instance), deploys only very scarce and ambiguous information. Therefore, the main task of perceptual recognition is to create hypothesis about what we are looking at. Because working in conditions of extreme scarce and incomplete input, in this model almost all aspects of what we see owe their appearance not so much to the photons impressing our retina but to the inner *constructions* of the visual perceptive system. An alternative model presented by Gibbs stresses the fact that the stimulus is much more informative when we consider its global impact on “a mobile observer over time” (342). So, given a sufficient informative stimuli, all that the observer perceptual apparatus must do is to pay great attention: “all they [perceptual systems] have to be ... is good listeners, good extractors of the information” (342).

Dretske also connects Fodor’s modularity hypothesis with these two roles attributed to perceptual systems. In Dretske’s perspective “Modular systems are not intelligent. They don’t have to be. They have no problems to solve. They just do what the stimulus tells them to do.” (343) Dretske reaches this conclusion because, in modular systems, upper modules cannot generally influence the cognitive processes of lower modules. (For instance, in the Mueller-Lyer illusion, even if you know that the two segments have equal length you still “see”³ them as having different lengths.) So, we might say that they are “stimulus driven” (343), and, for the same reason, they are more easily described as “bottom-up” processes. It seems however that Dretske faces a problem: the fact that a processing module is not influenced by ‘upper’ modules does not mean that it does not make hypotheses itself, or even that it makes *less* use

³ It is not very clear if this is sense or meaningful perception, since in this case we are talking of misperception, and it is not at all clear that object perception can ever be mistaken as we shall see in the final chapter.

of hypothesis and the kind of problem solving strategy that the computational approach subscribes. Dretske, however, says that: “it is the stimulus itself ... not the system’s ... hypothesises about that stimulus (information available at the top) that guides the processing of incoming signals” (343). This relation between the preponderance of stimuli in modular models is not at all clear and we will discuss it later in the “Critical Exposition”. However it is clear that Dretske stick together modular, bottom-up, stimulus driven and direct models of perception. Non-modular systems will have the opposite characteristics. They will be constructivist, top-down and driven by problem-solving methods.

Dretske’s point is that – although we do not know very well what happens in the case of sense perception – meaningful perception “is clearly not modular ... facts are not learned without the cooperation of the entire cognitive system” (344). This global involvement is shown in two ways: by the “intelligence in the application” (344) of concepts to the objects (something that does not happen in sense perception)⁴ and in the holistic character of meaning perception: “changing what the subject knows ... one easily changes what the subject ... perceives in a cognitive way” (344).

To Dretske the “real [difficult] question” is to know whether sense perception is also “intelligent” in the sense that meaningful perception is. Now, to Dretske, “It seems fairly safe to say that the events comprising very early vision exhibit fewer marks of intelligence than those farther ‘up’ the visual pathway.” (345) The processing occurring at the retina is quite modular (although we must say it already distorts the input) and therefore is not intelligent according to Dretske definition. But this just reports to the initial stages of sense perception. How about the later stages? The problem, according to Dretske, in determining just how intelligent sense perception is, is just that we don’t know very well how far does it go. We do not know which modules of the brain are involved in its treatment that allow for the “conscious experience whose occurrence constitutes the (sense) perception” (345); we don’t even know what is “the nature of sensory representations” (345):

“Are sensory representations what philosophers and psychologists used to call sensations (raw, uninterpreted, sensory givens)? Or are they more like what they now call percepts, cognitively enriched (more fully interpreted) experiences of the object? ... How can one tell if perception of objects is best thought of in terms of a clever detective or a good listener if one can-

⁴ This is also a delicate point that we will criticise.

not say what the final product, what kind of representation, this kind of perception is supposed to produce?" (345)

Critical exposition.

In Short:

Perhaps the main criticism we can present to Dretske distinction of several levels of the perceptual system is that he is not saying really anything new, and that he didn't even go far enough. The distinction between levels in the perceptive field is an enduring subject of research, and, on the other hand, it does not seem clear that, if we want to find a working model for brain functioning, it is helpful to divide the brain in *only* two types of perceptive processing. More plausible, each sense will have its own panoply of processes not easily comparable in any systematic way to other senses. Also, it is very likely that other animals should have in many respects different stages of processing. The second criticism is that the sense in which Dretske uses sense perception in the chapter we have been analysing seems to be different and even inconsistent with the one he had used in the beginning of the article, when the distinction was introduced. Here it seems that sense perception is a feature of certain perceptual systems of the brain, perhaps even connected with consciousness, in the beginning of the article, it seemed that it was an objective property of causal relations between subject and object. (In the same way we see 'XYZ' when we see *that* there is H₂O in the tank.)

Longer Version:

The main problem as to do with the problem of conceptualisation. What is necessary, exactly, to conceptually categorise or recognise objects: a proper response, consciousness, or just a large enough array of data? When we look at the way perceptual systems are scattered and interconnected in the brain it is difficult to identify it as composed on the one hand by systems devoted to object perception and, on the other hand, by systems devoted to cognitive perception. On the contrary, there seems to be an intermingle between every kind of system *and*, from the very beginning, in the retina or in the cochlea, we can observe already a kind of active integration of data, identification of features, that are completely at odds with sense perception as Dretske defines it. It seems, by the contrary, that perception, whatever it is, *consists in nothing but* identification and categorization, and this, we repeat, even at the most elementary bases of perception. It is commonly known, for instance, that the signs transmitted by the optic nerve are about lines and shapes, not a pixel-by-pixel description of the world. Of

course, it all depends on what we call “concepts”. We can say that the fovea does not have a “concept” of a line. But nevertheless it seems obvious that it can “recognise” a line when it sees one (because it almost only responds to lines and shapes). Perhaps we are talking metaphorically. But, if recognition isn’t just the appropriate response to a great variety of stimuli that have all a common property, what is it then? What is necessary for x to “recognise” y in a literal sense? This is a recurrent problem in determining the conceptual capacities of the brain systems. For example when Dretske says about the modularity hypothesis:

“it is the stimulus itself ... not the system’s ... hypotheses about that stimulus (information available at the top) that guides the processing of incoming signals”. (343)

It is easy to see where the problem lies. It is not at all clear that hypotheses are *only* available at ‘the top’, that is, on more interconnected modules. The opposite supposition would indeed be much more natural: to suppose that each module has its own set of built-in and learned hypotheses that it uses to treat input signals. In fact, modular systems seem better prepared to organise large groups of hypotheses according to their relevance and application. Is Dretske simply doing a mistake here? Perhaps not. The answer might be in what he considers to be ‘literal’ as opposed to ‘metaphorical’ reasoning (340-1). *Metaphorically* we may say of computers that “they know, that they remember, recognize, infer and conclude.” (340), or of thermostats that they sense “a drop in room temperature” (341). The question Dretske wants to examine is, on the contrary, if “visual systems ever literally solve problems, ... formulate hypotheses ... in the way that rational agents do this at the conscious level”.⁵ (341)

This would indeed clarify Dretske’s position: if literal reasoning supposes consciousness then, for the perceptual system to be considered as making inferences, hypotheses, etc, it would have to depend on the higher modules that alone seems to have access to consciousness. To return to our starting point, if conceptualisation demands consciousness, then we can have a good reason to qualify preliminary processing made by (which *seems* like categorisation) the brain as non-intelligent or non-conceptual. The distinction would not be made based on the particular processing operations of the brain (which, described from a 3rd person per-

⁵ My underline. The passage is a little unclear about the referent of ‘this’. In our version it refers to reasoning, but Dretske might be exemplifying how different conscious agents think about distant sources of stimulation (check passage). The examples we can now remember came from astronomy. The earlier ones that had to do with the distance of the sun, the size of the earth, etc, latter are mostly about quasars and spectral analysis of light. Indeed, we think that a lot of similarities can be found between both kinds of inferences. It would make, in our view, a suitable line of research.

spective, always seem intelligent) but in the fact that only some of them would be dealt by conscious procedures. This would be closer of a good working model to study the brain and consciousness.

But this raises two problems: first we don't know if Dretske is saying that literal reasoning supposes consciousness, here he only establishes a comparison – “in the way that ...” – but what is the way in which rational agents at a conscious level make inferences? Later Dretske also seems to imply that consciousness must be involved in sense perception when he speaks of the “conscious experience whose occurrence constitutes the (sense) perception” (345). But in both cases (check especially the last quote) the connection seems a little obscure.⁶

The second problem is that, instead of clarifying the argument, the introduction of consciousness can only obscure things further. In fact, it is difficult not to defend that there are some cases where (intelligent) recognition certainly arises but consciousness does not. This happens for instance when we read. We are not aware of every particular letter or of every particular trace, but it is quite obvious that we must recognise and categorise them, and that certainly classification and memory are involved in this process, although consciousness simply isn't. Same thing when we drive. Now, if we want to maintain Dretske's assertion that meaningful perception demands sense perception, and if there are instances of meaningful perception where consciousness is not necessary, it follows that consciousness is also not necessary to sense perception. But then what is?

Direct and Representational Realism.

If we understood correctly, the distinction between a direct realist and a representative (i.e. indirect (339)) realist is about what he says to perceive: objects or images of objects, respectively. That is, in the second perspective we are always aware of an image that for instance, is the result of a contact with a physical object, or of a dream, or of an hallucination; an image which takes some time forming in our heads. The direct realist, however “deny that we are aware of mental intermediates”.⁷ Direct realists may be constructivists (344), its not that the brain does not construct representations, we are simply not aware of them as representations.

⁶ Also, if he was really presuming consciousness to be a necessary property of reasoning (and that would be a good explanation of why we should not attribute it even to Cray computers), than all we have to do to say that reasoning is not involved in sense perception is to say that consciousness does not seems to influence sense perception (like in the Mueller-Lyer illusion). But this argument (which would be completely decisive on this notion of reasoning) is never used, and Dretske does not even conclude that constructivism does not apply to sense perception.

⁷ Dretske (1995), p.571.

Dretske contribution is to show that one can be a direct realist regarding sense perception but an indirect realist regarding meaningful perception. In any case, he does not tell us what we should be. Alas!, we can choose.

Criticism.

The fact that Dretske does not commit himself to any of these views seems quite understandable: there seems to be no contradiction (or interest) in upholding them both. Can't we say even that sometimes we are aware that we are having a perception of objects, and, at other times, we are just aware of the objects? We could even try to describe when this happens and stuff, but what would be the point? Anyway, if the question is framed not in terms of what we are aware of, but of what is in fact the foundation of knowledge, the problem disappears. Because either it is framed as an empirical problem about how the brain interacts with nature – and the direct realist loses its foot due to the distortion input signals suffer, even at the retina level⁸ –, either it is framed as a question about the ultimate reality of objects in themselves – and then it is just a matter of taste. Yet, it should be clear that, at least at the brain level, we don't have any foundation for knowledge. Brains make tentative hypotheses on their surroundings and their relative success helps to determine the viability of the organism or the species. Which means we now (after four and a half thousand millions of years) have fairly good brains to use, because we kept every kind of mechanisms and hypotheses that proved useful, but there's no foundation, just success and reinforcement; and, more to the point, there is no *one* foundation, except, in some sense, trial, error, and selection. Anyway, there seems to be a more interesting trend in this chapter, we will explore it now.

⁸ And also because it has been showed that the brain keeps a lot of info on the position of the head, for example, to correctly interpret the signals that we receive from the outside (see work by Berhoz on this). It is also easy to see that, understood as an empirical theory about how the brain interacts with nature, direct realism is incompatible with any form of constructivism.

When does the child always see the cat?

The child who mistook XYZ for a cat.		
Meaningful Perception	Sense Perception	
	As causal relation between S and O	As “sensory representation”
It is a question of degree, you can always see more facts about the cat. It can be considered as “a measure of the perception’s meaningfulness”. (334)	It is an all-or-nothing relation. Either the object is the cause of the perception either it isn’t. There is no middle ground.	“Sensory representations” (347) are also a matter of degree (although probably not dependent of conceptual learning. “Physiological changes” or “developmental processes”, for instance, can “improve the sensitivity of vision” (347).
Mistakes, or “perceiving-as” is called by Dretske “hybrid perception”. It is close to meaningful perception, but not quite the same, because it is not a knowledge. In Dretske article, for simplification, they are taken as equal.	There cannot be any errors. The child is seeing a cat if and only if the child is seeing a cat. Whatever the child thinks is irrelevant for this.	As a brain process, it is obvious that such errors do exist at all levels of perception: they are the basis of learning and provide the principals for neural plasticity.
Internal perception.	Demands external observer.	Internal perception.

We have to start by saying that we see in Dretske paper two different uses of “sense perception”. One was already referred in our paper, it is sense perception viewed as a kind of rep-

resentation, more precisely as a “sensory representation” (345). Dretske even vaguely connects it with consciousness but, anyway, it is understood as result of certain sets of perceptive structures in the brain. In that perspective we could fairly say that dreams, imagined objects, etc, are suitable objects for sense perception. It also seems that there is no reason why sense perception should not be, like meaningful perception, a matter of degree. And being a representation made by the brain it is clearly an internal feature.

Now, in *this* particular sense, it is not at all clear that “the child who mistakes the cat for a sweater” (333) does indeed see the cat. There are three possibilities: *i*) the perceptual structures of the brain did form the sensory representation of a cat, that was afterwards misrepresented by conceptual categorisation; *ii*) the sense perception structures of the brain did a mistake making a representation of a sweater instead of a cat; *iii*) the sense perception structures of the brain ambiguously represented the cat so that he could be equally classified as a cat or as a sweater.

Now, only in the first case can we say that the child who mistakes the cat for a sweater did indeed see a cat (as an object). Of course, she was looking in the direction of the cat, and some photons that were reflected by the cat fur did reach their eyes. But this is surely not sufficient to show that she has made a representation of the cat.

Things get worst with the example of agnosia. Everyone knows the example of the man who mistook her wife for a hat. But according to Dretske the man was really *seeing* his wife notwithstanding the fact that he had no idea about it. In Dretske (1995) he is even more clear on this point:

“*A causal theory of perception* (of objects) holds that the perceptual object, what it is that we see, taste, smell, or whatever, is that object that causes us to have that experience. ... What we know and believe, how we interpret the experience, is irrelevant, although it will, of course, determine what we *say* we see and taste.” (570)

What this means is that what makes the man to see his wife (in the causal O-S sense) has to do with the fact that it was his wife that produced the experience. If it had been a Virtual Reality Generator (VRG), even with a perfect quality, we could not say that he had saw his wife, because, *causally*, the object that produced the perception was not his wife but some VR stuff. So it is perfectly possibly (if perfect VRG’s are possible) that you have exactly the same pat-

terms of activity in the brain, the same first person experience, but that, nevertheless, you are seeing different things.

This shows, in our view, the second way in which sense perception is used in the article. There are several things about it that should be spelled out. First this kind of sense perception is not a matter of degree, the causal relation between subject and object is an all or nothing relation. Either you see a cat or you see a sweater, a bean or a bug. This will depend on the facts, not on any interpretation of them. Second, while meaningful perception can make mistakes, it makes no sense to say that sense perception can make mistakes (Dretske never says it can). That is because the relation x sees the object y is an external and objective relation; there is no other relation according to which this can be measured. Now this creates the following problem:

Imagine that you are looking at the stars and you say: look, isn't that star beautiful? Now, although you perceive *that* it is a star, it is very unlikely that we are seeing *a* star. To know what object you are seeing you would have to consult an astronomer, he would then decide if you saw a star, a planet, a binary system (more probable), a globular system or perhaps even a galaxy. Of course the astronomer has its limitations: most of the single stars may have planetary systems, for the moment we do not even know what is the probability of any given star to have planets. So it would be difficult to distinguish between seeing a single star and seeing a solar system. But there are even more complicated cases: quasars are objects that emit low-frequency and low-energy electromagnetic radiation. The most common explanation is that, when you look at a quasar (through a picture or a screen) you are really looking at very distant and powerful sources of light, perhaps gigantic agglomerates of galaxies being devoured by black holes. But this is just an hypothesis, in fact quasars might reveal to be quite different things. What this shows is that although sense perception is the most basic form of perception, you need really good knowledge to say what object you saw. That is because the object you saw is not the internal object of meaningful perception, it is not an internal representation, but a real object, which has entered a causal relation with your senses, and is the cause of your perception. Of course, if you consider that scientific knowledge is always fallible, or, worse, if you maintain an instrumentalist view regarding scientific theories, you must also declare that we can never know (with certainty) which objects we see in our daily lives.

This creates a paradox. Although sense perception is a requirement for meaningful perception, to determine which object you see, we need, at least in certain cases, more knowledge

then we can have. So that it turns out that in several cases we cannot say anything of the object that caused the sensation. This is particularly true if we consider theories about objects in themselves like idealism, physicalism, dualism, “pluralism”, or others. According to which theory we choose we will have a set of incompatible descriptions of the objects that caused our perception. Like Dretske says:

“One doesn’t have to know, let alone know for certain ..., that there are physical objects in order to see (sense perception) physical objects. Such knowledge is only required for the perception of the fact that there are such objects ... it may turn out that we see ordinary physical objects ... every moment of our waking life without ever being able to know (if the sceptic is right) that this is what we are seeing.” (338)

In fact, if the sceptic is right, it might turn out that we are seeing almost anything indeed. Perhaps we are seeing a fraction of the multiverse, a small fraction of the multi-cat that stands before us, or an idea in the mind of god, or a physical automaton that emulates feelings, or a divine warrior for the super-cat god, or even an ET intelligence thing (did you saw the film?). So, when we want to say I am seeing the object x in fact we cannot substitute x for anything. Even if we like realism better, scientific developments have shown that, to obtain little differences in predictions (like what happen in astronomy and dynamics), we must sometimes replace a complete world picture. So when we say that we are looking at a brain, or the sun, or the cat, or the plant, we are with all probability wrong, like 400 years ago everyone was wrong when they thought that they were (sense) seeing the sun, the moon, the ship on the water, or the stone falling and slipping through the ice. Whatever causes our sensations, it must remain hidden, at least while the sceptic is right.

There is another reason for this, besides the epistemological argument. Any object has an indefinite (if not infinite) amount of properties. If you really want to describe the object that causes the sensation (like in the case of the poisonous mushroom) you have to describe all the properties that it possesses. And this is clearly impossible.

Conclusions:

We have almost skipped arguments about realism. We have based our text on a distinction between two ways of understanding the perception of objects. In the beginning of his article Dretske supports sense perception by making a logical point: the child who mistakes the cat for a sweater must see in some sense the cat. But it is not at all clear that the translation of this logical point to brain science implies that there are in fact two different perceptual systems in the brain, one designed simply for objects and the other for conceptual categorization. We have tried to show in our text that it is difficult to say where the brain doesn't make categorizations (even at the retina). So, it would perhaps be more natural to find a less rigid working model for the brain. The introduction of consciousness as a criterion for 'literal' intelligence does not seem to solve the problem. Regarding the causal theory of perception, that Mary always sees x even if she mistakes it for something else, we have put to doubt the possible uses of such relation since the x we see seems to completely transcend our knowledge. This conclusion seems so important we are going to end our text repeating a quote from Dretske:⁹

“One doesn't have to know, let alone know for certain ..., that there are physical objects in order to see (sense perception) physical objects. Such knowledge is only required for the perception of the fact that there are such objects ... it may turn out that we see ordinary physical objects ... every moment of our waking life without ever being able to know (if the sceptic is right) that this is what we are seeing.” (338)

References:

F. Dretske, "Meaningful Perception", in D. N. Osherson et S. M. Kosslyn (eds), *An invitation to Cognitive Science*, vol. 2: Visual Cognition, MIT Press, 1995

Dretske (1995), "Perception" in Audi, Robert (ed.), *The Cambridge Dictionary of Philosophy*, 1995, Cambridge University Press.

⁹ With all these criticisms we forgot to say what we appreciated best in Dretske: it's his refusal of perception relativism. Perhaps through the initial influence of Kuhn's writings, and to counter the unappealing authority, of science, some authors have tried to defend that perceptions, even at their basic level, may be modified or even completely dominated by the conceptual context in which subjects are emerged. Kuhn, of course, has never defended relativism unless in a very precise sense. Although it seems that concepts can help to *enhance* perception (like in music), we sympathise absolutely with Dretske defence on a non-relativistic position. We think, however, there are better arguments and empirical evidence in support of that view.