

John Buridan's Empiricism and the Knowledge of Substances
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The fourteenth century, foremost due to William Ockham, saw some radical changes in the way substance was conceptualized. Ockham challenged the Aristotelian or Thomistic way of thinking by systematically rethinking metaphysics. According to Aristotle and Thomas Aquinas a substance has no parts that are prior to it. A composite substance, an animal or a human being for example, comes to be out of another substance, but only the prime matter is the same and it has no existence on its own. Since matter is the principle of individuation, according to Aquinas, form has no existence before its union with matter. Hence nothing in an individual composite substance pre-exists its existence in nature.

The single substantial form of an animal dominates the matter to such a high degree that all the properties of the animal are due to the form. An animal body exhibits features that are attributed to it because it consists of 95% water, but, according to Aquinas, there is no water in the body. Instead there is flesh and bones that have, in the process of being made out of water, acquired some of the powers and features water has.

Ockham's ontology includes individual substantial forms, individual accidental forms and individual matters. A composite substance is composed of its essential parts, namely its matter and form. Besides its essential parts, a substance also has integral parts, like flesh bones, hands etc. Anything with integral parts is extended and material. All things with essential parts are composed of matter and hence also have integral parts and are extended. Everything extended is a quantity and every quantity is divisible into quanta, hence there are no indivisible matters and substances.

Ockham insists that a substance is nothing but the parts that make it up. This is contrary to Aquinas who held that although substances have integral parts these parts depend ontologically on the whole of which they are parts. Each part of a substance is actual and not dependent on anything to make them actual, Ockham argues contrary to Aquinas.

All the forms in all material substances are also extended. In a piece of wood, all the forms are extended just as the matter they inform. The only non-extended forms are the human intellectual soul, angels, and God on Ockham's view. Angels and God are, however, outside nature, and hence the only non-extended or immaterial form in nature is the human soul.

Two metaphysical theses are of crucial importance for understanding the changes in the concept of a substance that takes place with Ockham.

1. A whole is nothing but its parts.
2. All parts of an actual thing are themselves actual and their actuality is not derived from the whole.

If these two are combined with a third principle, a problem well known in Ancient and Early Modern philosophy appear, namely the problem of the identity of a substance over time. The principle is:

3. All material substances change over time

Given Ockham's view of substance it is not clear what constitutes the unity or identity over time of a substance. On Aquinas view this is not an issue since a substance will be the same as long as it has the same substantial form and if the substantial form goes, so does the substance. This is what substantial change means on his view. This is the whole reason Aristotle introduced forms in the first place, but for Ockham there are no privileged parts like that. A substance is a substance due to its parts and all parts are individual parts of the substance. No substance on this view is after a process of growth, for example, numerically the same as before. Ockham does not explicitly address this problem, but Buridan does.

He argues that there are three ways in which something can be numerically the same over time, namely totally, partially and successively. Something that never gains or loses a part is totally the same over time. Hence only indivisible substances are totally the same over time. There are only three such things, namely God, Angels and the human soul.¹ Things that are partially the same over time are such things that have a principal part that is totally the same over time. In nature, it is only humans that are partially the same over time.² Buridan never explicitly tells us what is required for something to be successively the same over time. He gives an example of the river Seine which is said to be the same river over a millennium because the water parts succeed each other continuously.³ This is not sameness properly speaking, according to Buridan, since there is nothing that is the same over time, but rather there is a succession of entities, related enough so that the same name can be applied.

¹ "Tripliciter enim consuevimus dicere aliquid alicui esse idem in numero. Primo modo totaliter, scilicet quod hoc est illud et nihil est de integritate huius, quod non sit de integritate illius, et e converso; et hoc propriissime esse idem in numero. Et secundum illum modum dicendum est, quod ego non sum idem, quod ego eram heri, nam aliquid heri erat de integritate mea, quod iam resolutum est, et aliquid etiam heri non erat de integritate mea, quod post per nutritionem factum est de substantia mea." (Physics I, q. 10.)

² "Sed secundo modo aliquid dicitur alicui idem partialiter, scilicet quia hoc est pars illius, et maxime hoc dicitur, si sit maior pars vel principalior vel etiam, quia hoc et illud participant in aliquo, quod est pars maior vel principalior utriusque. Sic enim Aristoteles nono Ethicorum, quod homo maxime est intellectus, sicut civitas et omnis congregatio maxime a denominationibus partium. Et ita manet homo idem per totam vitam, quia manet anima totaliter eadem, quae est pars principalior. Sic autem non manet equus idem immo nec corpus humanum."

³ "Sed adhuc tertio modo et minus proprie dicitur aliquid alicui idem numero secundum considerationem partium diversarum in succedendo alteram alteri, et sic Secana dicitur idem fluvius a mille annis citra, licet proprie loquendo nihil modo sit pars Secanae, quod a decem annis citra fuit pars Secanae. Sic enim mare dicitur perpetuum, et ille mundus inferior perpetuus, et equus idem per totam vitam, et similiter corpus humanum idem. Et iste modus identitatis sufficit ad hoc, quod nomen significativum dicatur discretum vel singulare secundum communem et consuetum modum loquendi, qui non est verum proprie. Non enim est verum proprie, quod Secana, quem ego video, est ille, quem ego vidi a decem annis citra. Sed propositio conceditur ad illum sensum, quod aqua, quam videmus, quae vocatur Secana, et aqua, quam tunc vidi, quae etiam vocabatur Secana, et aquae etiam, quae intermediis temporibus fuerunt, vocabantur quaelibet in tempore suo Secana et continue fuerunt ad invicem in succedendo. Et ex identitate etiam dicta secundum huiusmodi continuationem dicimus hoc nomen 'Secana' esse nomen discretum et singulare, quamvis non ita proprie sit discretum sicut esset, si maneret idem totaliter ante et post."

Although no composite substance in nature, except humans, remain the same after growth or decay one can say on Buridan's view that a horse or a river is the same over time because of the continuity of its parts and this sort of sameness does not require that any given part remain through the change.

On this view then nothing except a human in nature has an identity or unity stronger than a heap. An animal, for example, is the same over time in the same way as the river Seine is same over time. From birth to death, the animal is the same because there is a succession of parts succeeding each other occupying the same spatiotemporal location. This is true of a heap as well and there is no other unity to an animal. This metaphysical problem implies an epistemological problem.

Explaining how and whether we have knowledge of substances is a well known problem in early modern philosophy. Locke for example argues that the idea of a particular substance is the complex idea of a set of coexisting qualities and powers, together with the supposition that there is some substrate upon which they all depend. Locke is not clear about the idea of this substrate (Essays II xxiii 2), but he nevertheless cannot eliminate the concept of substance altogether, since he must somehow account for the existence and coherence of just this group of features. On one reading of him we then simply infer the notion of a substance from a collection of simple ideas of sensible qualities.

Hume on the other hand argues that the inference of a substance is just an illusion or a simple mistake. He explains this mistake in the following way:

When we gradually follow an object in its successive changes, the smooth progress of the thought makes us ascribe an identity to the succession... When we compare its situation after a considerable change the progress of the thought is broken; and consequently we are presented with the idea of diversity: In order to reconcile which contradictions, the imagination is apt to feign something unknown and invisible, which it supposes to continue the same under all these variations; and this unintelligible something it calls a substance, or original and first matter.

What we infer to be a substance on Locke's view does not really exist and is just a bundle of perceptions, according to Hume.

In a recent paper, G. Klima has argued that Buridan thinks that there are simple substantial concepts and that he rejects the view about substance common to the British empiricists.⁴ Buridan argues that either we don't have a simple concept of substance, that is, we only have a complex concept, or we do have a simple concept. He writes in his commentary on Aristotle's Physics that:

The second conclusion is that we have simple concepts of substances, for the concept of man from which we take the substantial term 'man' is a concept of substance, if man is a substance. And that concept supposits only for a substance, for if it supposited for an accident or for something composed from substance and accident, then it would not be true that man is a substance, for neither an accident nor something composed from substance and accident is a substance; but precisely a substance is a substance, and that concept, while it supposits for a substance, does not even connote an accident that is

⁴ See G. Klima, "John Buridan and the Acquisition of Simple Substantial Concepts",...

other than that substance, for then it would not belong to the category of substance, but to that of an accident, as do the terms ‘white’ or ‘big’ or ‘small’, etc. For these terms supposit for substance and not for anything else, just as the term ‘man’ does, but they leave the category of substance because of their connotation; therefore, a concept from which a term in the category of substance is taken is not a concept of any accident, or of something composed from substance and accident, but only of a substance or substances.

And if anyone were to say that they are complex, then the complex ones are combined from simple ones, for in the analysis of concepts one cannot go to infinity; and then those simple ones and the ones composed from them are only of substances; therefore, there are simple concepts of substances.⁵

Buridan thinks that a substance concept cannot be made from accidental concepts, since substance concepts for him are absolute concepts, which only signify whatever they signify and nothing else. Accidental concepts on the other hand signify a thing, but they also connote another thing. Terms subordinate to absolute concepts are predicated of whatever they signify essentially while terms subordinate to connotative concepts are predicated of whatever they signify accidentally or denominatively. Their predication is a direct consequence of their mode of signification. On this view, then a substance concept cannot be a collection of connotative concepts, since they would then not be substance terms. He writes:

Again, if the substantial concept of man were complex, then let us posit that it consists of three simple ones, namely, a, b, and c. Then, if no concept of substance is simple, a can only be a concept of accident, and the same goes for b and c; therefore, the whole combined from them would also be only a concept of accident, and not one of substance, for a whole is nothing over and above its parts. But this is absurd, namely, that the substantial concept of man should be nothing but a concept of accidents; therefore, etc.⁶

⁵ “Secunda conclusio est ista quod de substantia habemus conceptum simplicem, quia conceptus hominis a quo sumitur iste terminus substantialis ‘homo’ est conceptus substantiae, si homo est substantia; et ille conceptus non supponit, nisi pro substantia, quia si supponeret pro accidente vel pro composito ex substantia et accidente, tunc non esset verum quod homo est substantia, quia nec accidens est substantia, nec compositum ex substantia et accidens est substantia, sed praecise substantia est substantia. Et ille conceptus etiam supponendo pro substantia non connotat aliquod accidens aliud ab ipsa substantia, qui tunc non esset de praedicamento substantiae, sed accidentis, sicut ille terminus ‘albus’, vel ‘magnus’, vel ‘parvus’, etc. Illi enim termini ita supponunt pro substantia et non pro alio sicut iste terminus ‘homo’, sed exeunt a praedicamento substantiae propter connotationem; igitur talis conceptus substantialis a quibus sumitur terminus de praedicamento substantiae nec est conceptus aliquorum accidentium, nec compositorum ex substantiis et accidentibus, sed solum substantiae vel substantiarum. Et si quis dicat quod sint complexi, tunc complexi sunt compositi ex simplicibus, cum in resolutione conceptuum non sit processus in infinitum; et tunc illi simplices et compositi ex eis non erunt, nisi substantiarum; igitur substantiarum sunt conceptus simplices.” (Physics, I, q. 4.)

⁶ “Item si conceptus substantialis hominis sit complexus, ponamus quod hoc sit ex tribus conceptibus simplicibus, scilicet a, b, et c. Tunc si nullus conceptus substantiae est simplex, a non esset, nisi conceptus accidentis, et similiter nec b, nec c. Igitur totum complexum ex eis non esset conceptus, nisi accidentium et non substantiae, cum totum nihil sit praeter partes.

Now, as Klima has pointed out the British empiricists happily or perhaps not happily embraced the conclusion that ideas of substances are only a bundle of perceptions or inferred from sensory ideas. This cannot be right, argues Buridan; but how can he say this? Is he himself entitled to say what he says in these passages in the Physics commentary? I don't think so.

An absolute term is supposed to pick out its object as a rigid designator, which is to say that it picks out that object on all possible worlds. This is often, at least in contemporary philosophy, thought to imply some kind of essentialism. When I express identity statements like 'Water = H₂O' I am, on this view, claiming that both 'water' and 'H₂O' are rigid designators and if that is the case and 'water = H₂O' is true then it is necessarily true. On Buridan's view 'water' and 'H₂O' are names subordinate to one absolute concept and through this concept they pick out the same substance. For all this to be the case, there needs to be something about the substance that is essential to it and which does not change about it. If that were not the case, then a term like 'water' cannot be a rigid designator.

Another way of putting this is to think about the distinction between substantial and accidental change. In a substantial change the substance itself is destroyed, that is, the death of Socrates is a substantial change, but in an accidental change, an accident of the substance has been replaced by another accident, as for example in the case when the color of Socrates' skin changes due to him spending time in the sun. This is an accidental change because there are certain properties of Socrates that do not change and if those were to change then Socrates would not be Socrates any more. This is captured on Aquinas' view by saying that the substantial form remains the same. For the rigid designator 'water' to keep picking out water there needs to be something about water that does not change, that is, only accidental changes can occur, such as the heating or cooling of it, but if there is nothing about water that remains unchanged then all change is accidental change. If that is the case, then 'water' cannot be a rigid designator, since there is nothing about water that makes it water. Ockham's and Buridan's view of non-human substances seem to entail just this problems, since there is nothing over time that remains the same about such things. There is nothing about a substance that makes it into that substance, since all properties are exchangeable, and hence an absolute term cannot pick out the same thing over time. It cannot be a rigid designator.

This is quite a startling conclusion with thoroughgoing implications for science and epistemology. It seems to imply a kind of conventionalism in that there are no natural kinds. It implies skepticism about our knowledge of substances. It is furthermore unclear that, if there are no absolute terms, how can there be connotative terms? It also implies a serious inconsistency in Buridan's own thinking. Was he aware of this? Is there a way of making his thinking consistent?

Buridan seems to indicate an awareness of this problem or this implication of his metaphysical views on his epistemology and theory of mind in his commentary on Aristotle's *De anima*. In Book II, q. 7, he asks "Whether the whole soul is in some part of the animal body". One of the problems addressed is whether some quantitative part of a plant is a plant or whether some part of an animal is an animal or whether the foot of a horse is a horse. In discussing these problems he brings up some of the same issues we have seen above. He for

Sed hoc est absurdum, scilicet quod conceptus substantialis hominis non sit nisi conceptus accidentium; igitur, etc."

example says that “if the terms ‘animal’ and ‘horse’ are truly substantial non-connotative terms”, then one must accept the conclusion that a part of an animal is an animal, that a part of a horse is a horse.⁷ On the other hand he notes that:

As the second conclusion I posit that if these names ‘animal’, ‘horse’, ‘ass’, etc. are not truly substantial terms, but connotative, namely connotative of totality, then it is not the case that some quantitative part of an animal or a horse is an animal or a horse, and it is not the case that the foot of a horse is a horse.⁸

It is not entirely clear to me what this means, but it is clear that the thought that terms like ‘animal’, ‘horse’ and ‘ass’ are connotative is not alien to him. He also in the same question addresses the notion of identity that he develops in his commentary on Aristotle’s *Physics* as seen above.⁹ He seems to think that the third sense of identity developed is sufficient for solving the problem of identity of a non-human substance over time. He writes:

And further to this it should be said that we use another mode of identity less proper by which is understood only continuation in the succession of diverse parts just as we may say that the Seine has been numerically the same river for a 1000 years, and in this way we are able to say even more that Brunellus is numerically same horse from his birth to his death.¹⁰

Buridan seems to think that this notion of identity is sufficient for his epistemology. Let me further note that Albert of Saxony also worries about whether there are any substance terms. In his question commentary on Aristotle’s *Physics* he, for the same reasons as has been brought up above, says that the term ‘Socrates’ is not an absolute concept, but it is not strictly

⁷ “Ergo quantum ad istam dubitationem tertiam probata est prima conclusio quod quelibet pars quantitative animalis sit composita ex corpore et anima, et pars animalis est animal, et quelibet pars equi equus, et ita pes equi est equus, si isti termini ‘animal’ et ‘equus’ sunt veri termini substantiales non connotativi, et quod omnes partes anime equi sunt at invicem eiusdem rationis et eiusdem speciem animalis.” (De anima II, q. 7.)

⁸ “Secundam conclusionem ego pono quod si hec nomina ‘animal’, ‘equus’, ‘asinus’, et cetera non sint nomina vere substantialia, sed connotativa, scilicet connotative totalitatem, tunc non quelibet pars quantitativa animalis vel equi est animal vel equus, nec pes equi est equus.”

⁹ “De quinta autem dubitatione tractavi satis in primo Physicorum, ubi dixi Sortes non esse totaliter eundem quod Sor erat heri. Sed dixi ‘eundem’ secundum denominationem a parte valde principaliori, quoniam locutiones tales utuntur communiter. Propter usum communem concedimus ‘simpliciter’ et ‘absolute sine additione’ esse eundem, licet iste non sit proprie usus secundum proprietatem sermonis, et licet huiusmodi idemtitas non sufficit ad medium syllogismi affirmativum. Licet enim omne symum sit nasus et, secundum denominationem a parte, concedimus hominem esse symum, non tamen concedit hominem esse nasum. Et so hodie amputarentur Sorti pedes, non valet talis syllogismus: ‘Sor heri erat pedes, manus, cor, et caput. Et Sor est idem hodie quod ipse erat heri secundum denominationem a parte principaliori, ergo So rest hodie, manus, caput, et cetera’.”

¹⁰ “Et adhuc ibidem dictum fuit quod utimur alio modo idemtitate minus proprie que attenditur ex sola continuatione in succedendo diversas partes ad invicem, sicut diceremus Secannam esse eundem fluvium in numero a mille annis citra, et sic magis possemus Brunellum dicere eundem equum in numero a principio sue nativitatis usque ad mortem, et ad presens non dico plus de hiis.”

speaking a connotative term either.¹¹ Exactly what he thinks it is is not clear to me, but for now I am only interested in pointing out that they are aware of this problem and to some extent address it. The worrying conclusion seems to be that there seem to be very few if any absolute terms.

Instead of trying to defuse this issue, which I think is a real problem for Ockham and Buridan, I would like to throw more fuel on the fire by adding my take on Buridan's theory of cognition, which, it seems to me, has the resources to solve or at least dissolve some of the problem here being outlined. When Buridan explains how mental terms or concepts are acquired he begins by saying that the first concepts acquired are vague singulars. He thinks that in our interaction with the world the mind has the ability to unite or form a representation of the world through sense information provided to it by the five external senses. This is a rich representation which the intellect has to sort out and make intelligible. It does this by attending to or focusing on (putting in the prospect) the thing in this manifold. This activity of the intellect gives rise to first intellections or concepts. He calls these concepts vague concepts. They are vague because they are not uniquely of one singular thing although it is a singular concept. He describes them as containing a general part and a demonstrative, that is, they are best described as being about 'that animal' or 'that thing'. These vague singulars are the basis for further conceptualizations and from them we go to universal concepts or proper singular concepts. A concept is made to be universal by taking away the demonstrative element of the vague singular and it is made more singular or a proper singular by adding further singularizing circumstances to the vague singular, hence making it less vague and more determinate. This idea of a singular has been termed by Calvin Normore as its maximal specificity. A singular is singular if it maximally specifies the thing it is about. A singular term like 'Socrates' picks out Socrates because of the richness or maximal specificity of the singular concepts. It is by adding circumstances or descriptions to the singular concept that I narrow down its reference and make it specific. Hence a singular concept like 'Socrates' supports all kinds of inferences about him, that is, that he is snub nosed, that he is white, that he was Plato's teacher etc. A complete singular concept it seems to me would on this picture be like Leibniz's individual concepts. They are infinite in their content and hence nothing we human could have. Only God could have such a concept of 'Socrates'.

It seems clear that given this view no human could have a proper singular concept hence 'Socrates' on this view would not be an absolute term or rigid designator, since the term might not be able to pick him out in all possible worlds. This explains why we mistake him for his twin brother. Given this view, there is a sense in which Buridan can say that perhaps we can never get absolute terms, but we can get more or less close and this will be enough for us to use terms and classifications in science. This goes hand in hand with his criticism of skepticism and his revision of the notion of knowledge from an infallibilist conception to a fallibilist and the notion that we must relativize our concept of evidence. Scientific knowledge is only probable on his view.

¹¹ "Sed diceret aliquis: si aliquid posset incipere esse Socrates isto modo, sequitur quod hoc nomen Socrates esset nomen connotativum, sicut li album. Respondetur quod bene verum est quod hoc nomen Socrates non est nomen mere absolutum sicut est nomen rei manentis idem secundum permanentiam omnium suarum partium, nec etiam est nomen mere connotativum, sicut est hoc nomen album, propter hoc quod hoc nomen Socrates praedicatur in quid, sed est unum nomen medio modo se habens." (Albert of Saxony, *Questions on the Physics*, I, q. 8.)