Seventeenth-century atomist David Gorlaeus rejects Aristotelian forms and real universals in things while accepting components of Aristotelian accounts of knowledge including sensible species, the immateriality of the intellect and key features of realist theories of universals. To resolve two puzzles raised by his theory of knowledge I interpret Gorlaeus’ claims about universals in light of a contemporaneous Aristotelian view. Whether the puzzles are adequately resolved or not, they create a problem space within which figures like Descartes and Locke developed their views on the role of universals in scientific knowledge.

The atomist philosopher, David Gorlaeus (a.k.a. van Goorle) was a student of theology at the University of Leiden in the Netherlands when he died in 1612 at the age of 21. We know little about his short life, but two works by him, Exercitationes Philosophicae and Idea Physicae, survived and were published posthumously in 1620 and 1651 respectively. They contain the intriguing but often underdeveloped views of a budding philosopher whose ideas might have been completely forgotten but for two later perceptions of his philosophical contribution: one negative and one positive.

On the negative side, in 1642 the heretical implications of Gorlaeus’ philosophy were linked to René Descartes when Gijsbert Voetius, the Rector of the University of Utrecht, imputed “guilt by association with Gorlaeus” to Henricus Regius (Descartes’ follower at the University of Utrecht). Regius, like Gorlaeus had defended the theologically suspect view that the human body and soul form an accidental, not an essential unity. Thus, as Christoph Lüthy highlights, in the early modern period Gorlaeus was seen as a forerunner to the Cartesian philosophy (Lüthy 2013, pp. 16–17). As I argue in Descartes on Forms and Mechanisms, while still a far cry from what later
became Cartesian metaphysics, the novel implications of Gorlaeus’ account of modes and his arguments against Aristotelian forms represent an important transitional view between Scholasticism and Cartesianism (Hattab 2009, pp. 167–72). However, parallels to Cartesian philosophy do not appear to extend beyond select metaphysical doctrines as Gorlaeus does not advance mechanical explanations in his physics.

On the positive side, Gorlaeus has, in more recent times, received attention for his development of a systematic atomist philosophy that predates Pierre Gassendi’s Christianized atomist system. Gorlaeus’ views on molecular properties also precede similar innovations found in the works of Isaac Beeckman, Sebastian Basso, Galileo Galilei and Daniel Sennert. Hence Gorlaeus has been hailed as a forerunner to modern atomism by more recent historians of science (Lüthy 2013, pp. 19–21). But, as Lüthy shows, Gorlaean atomism differs significantly from both ancient atomism and early modern atomist natural philosophies (Lüthy 2013, p. 52). Gorlaeus’ atomism does not stem from the need to account for natural change or solve problems created by the new science of nature. Rather it is a consistent outgrowth of Gorlaeus’ fundamental metaphysical commitments, which in turn are theologically motivated (Hattab 2009, pp. 172–78).

In short, much of the scant research on Gorlaeus focuses on his atomism, and possible connections between his controversial alternative to Aristotelian natural philosophy and Cartesianism. But Gorlaeus’ views also have interesting implications for scientia, the scientific knowledge of causes resting on intellectual understanding of universals. Gorlaeus presents us with a curious and interesting anomaly when it comes to the role that experience plays in scientific knowledge. Other seventeenth century natural philosophers like Isaac Beeckman and Pierre Gassendi were led by their atomist theories to doubt our ability to know the underlying essences of things and to emphasize the role of observation and experiments in coming to know the properties of natural things. In Gorlaeus, by contrast, one finds no emphasis on systematic observation of natural phenomena. Despite his vehement rejection of Aristotelian forms, Gorlaeus retains a number of standard views one finds in Aristotelian accounts of knowledge, including the assumption that from our everyday experiences of things we can form universals that give us reliable knowledge of the natures of things. This seems to be in tension with his atomism. After giving a short overview of his metaphysics, I will discuss key elements of Gorlaeus’ theory of knowledge and address two puzzles generated by his theory of universals in conjunction with his metaphysics. I show that there is at least one highly plausible reading which would give Gorlaeus the resources to resolve these puzzles and provide a basis for universal scientific knowledge of real things. Moreover, his attempt to combine his atomist matter theory with an Aristotelian theory of knowledge...
opens up a problem space for more skeptical early modern philosophers like René Descartes and John Locke.

For Gorlaeus, being is one and so entity is always a unity. Gorlaeus goes on to distinguish different categories of being, each of which appears to have a different degree of unity. Real beings, as opposed to beings of reason which are fashioned by the intellect, have their proper existence in themselves, not in another. Their essences exist \textit{per se}. God obviously falls into this category and is one in the highest sense, having a simple essence. Gorlaeus also points out that each individual body, i.e., atoms, have simple essences and differ from God by virtue of being created, not by virtue of being composite (Gorlaeus 1620, pp. 260–61). Moreover, atoms are insensible. The complex, sensible objects of physics composed of these atoms seem to fall under Gorlaeus’ category of accidental being. Accidental beings are beings by aggregation and thus are one in a weaker sense. The union of atoms does not change the essence of the parts, and so if the mind treats the aggregate as one thing, it creates a being of reason that has its being from the intellect. However, as long as the mind recognizes that the whole is composed of many things it conceives of an extra-mental, albeit accidental being (Gorlaeus 1620, p. 25).

Accidental beings include co-existences, like cause and effect. As said, these co-existences, and other affections of being, like subject, instrument, sign, signed, whole, part, same, diverse, equal, unequal, similar and dissimilar are not essential entities. Rather they are accidental and hence extrinsic to and separable from being; thus they cannot constitute essential properties of being (Gorlaeus 1620, pp. 16–17). Given that physics is concerned with such properties, it follows that physics does not provide knowledge of essences, in the Aristotelian sense of the inseparable forms of macroscopic individual substances. And indeed, Gorlaeus rejects such forms. So at first blush, Gorlaeus’ view appears to go directly against the Aristotelian view that properly scientific demonstrations rest on knowledge of the eternal form of individual members of a species. Instead of proceeding from definitions corresponding to such forms, Gorlaeus’ science must proceed from precepts, each of which, he says, ought to be a necessary axiom (by which he simply means a necessary statement). On his view, the theoretical science of the intellect and its art, which is mathematics, share a common feature in that both are established from universal precepts.

With respect to the source of such universal knowledge, Gorlaeus accepts the Aristotelian maxim that whatever is in the intellect was first in the sense, with the qualification that there are some principles that are innate to us, namely, that God exists and is not two. In \textit{Idea Physicae} he states “Although the soul understands many more things than what it
has from the senses, however, it does not understand those same things unless through a certain similitude with those which are sensed” (Gorlaeus [1651] 1986, p. 73). How does he guarantee similitude between our cognitions and things in nature? Despite his rejection of Aristotelian forms, in Section II of the Seventh Exercise “On Quality” Gorlaeus affirms the existence of visible species that are distinct from the bodies which generate them, on the grounds that they can exist in other subjects, like a mirror. He argues that such species cannot be spiritual qualities because it is a contradiction for the qualities of a body reflected in a mirror to resemble the body and exist in another body, like the mirror, while being spiritual. Nor can such visible species be bodies because one body cannot penetrate another. While Gorlaeus leaves their exact ontological status up in the air, he concludes that a visible species is a *quasi* image of a certain body: “For they represent its figure, color, number, motion or rest, and distance” (Gorlaeus 1620, p. 109). Though we can be led into error when a spirit, like the Devil, throws out empty species while there are no bodies present, absent such malicious intervention, there is, in principle, no cause for skepticism regarding the senses given that visible species are like images of the bodies themselves (Gorlaeus 1620, p. 111).

In addition to visible species, which include darkness and shadow as well as *lumen* (the visible species of light/lux), bodies produce tactile species. Heat is in fact the tactile species of light. Despite the fact that Gorlaeus takes substances to produce heat and cold by motion, he considers heat and cold, along with light and darkness, to be real entities (*qua* accidental being). Such qualities are distinct from their subjects, though they are less noble than the substances which produce them (Gorlaeus 1620, pp. 110–114). In this regard, Gorlaeus’ views are closer to Aristotelian theories than subsequent seventeenth century views that sensations of light, colors, hot and cold do not correspond to any real qualities in bodies, but rather result from the causal interaction of our sense organs with the sizes, shapes and motions of material particles. For Gorlaeus, our visual and tactile perceptions bear a direct resemblance to qualities of bodies as transmitted by the copy that is the corresponding species. However, Gorlaeus also needs to account for the intellect’s ability to abstract from these species the true universals that ground both the sciences and the arts.

According to Gorlaeus, every mind apprehends through notions, and one notion does not express the whole thing. We thus need multiple notions for expressing the whole thing, namely, notions which designate what each thing is and to which kind it belongs. For example, one notion will designate either the cause or the effect, the subject or instrument, or a certain tendency of the thing but not all at once (Gorlaeus 1620, pp. 7–8). Gorlaeus makes essentially the same point in *Idea Physicae*: “Therefore we
wholly deny that a simple understanding \textit{(intellectum)} is given, for the mind does not perceive any one concept but it perceives several which are to be joined, [and] which once joined effect axioms” (Gorlaeus [1651] 1986, p. 74). Curiously, despite his view that such notions could not be in the intellect unless they were first in sense, Gorlaeus does not advocate systematic observation of nature and experimentation so as to enlarge the number of notions by which we can know things. Perhaps, given his view of sensory perception, he takes this to be unnecessary. Gorlaeus does not specify what these notions are but the reference to kinds indicates that these would include universal concepts along the lines of Aristotelian species and genera. While he repeats standard arguments for the immateriality of the intellect, Gorlaeus holds that it must know singular things as well as universals (Gorlaeus [1651] 1986, ch.13).

We can situate these positions among Aristotelian views since Gorlaeus was in all likelihood drawing on and responding to the prevailing theories he encountered in his intellectual environment. Suarez’s influence on Gorlaeus’s Professors at the University of Leiden has been documented (Krop 1993, pp. 67–82). I will relate Gorlaeus’ view to Suarez’s more well-studied view so as to understand how Gorlaeus’ theory of universals compares to one that formed an important part of his education. For the same reasons as Gorlaeus, Suarez holds that the intellect is immaterial, and knows singulars as well as universals. For Suarez, unlike the Thomists, the intelligible species is not a universal representation of a human being but a distinct representation, e.g., of Gorlaeus. As James South discusses in “Singular and Universal in Suarez’s Account of Cognition” (South 2002), Suarez rejects the Thomist account according to which the intellect only knows the universal directly, by means of an intelligible species that the active intellect abstracts from the phantasm of the singular thing found in the inner sense. According to Thomists, upon receiving various species of Gorlaeus, my internal sense would combine them into a phantasm of the singular person, Gorlaeus, from which my active intellect abstracts the universal “human being.” However, given that it is a universal representation, the intelligible species of a human being does not resemble Gorlaeus or any other singular thing, and so to know that Gorlaeus is human, the passive intellect must use the intelligible species to indirectly know singulars by

1. The other relevant context is the University of Franeker in Friesland, where Gorlaeus enrolled as a student in 1606. As Lüthy highlights, unlike other Dutch universities at this time, the teaching of Aristotelian philosophy was not required there. Gorlaeus’ friend, Frederic Stellingwerff, an older student of law at Franeker, was a Ramist. Gorlaeus’ professor of natural philosophy, Henrico de Veno, was influenced by the Italian naturalist philosophers, Girolamo Cardano and Justus Caesar Scaliger (Lüthy 2013, pp. 71–5). I have not found any significant connections to Gorlaeus’ writings on universals.
reflecting back on phantasms of singulars like Gorlaeus and Princess Elizabeth (South 2002, pp. 791–92). Suarez posits intelligible species as well as phantasms of singular things, arguing that the materiality of the phantasm prevents it from being the cause of the spiritual species in the spiritual intellect (South 2002, p. 794). Therefore, it is the soul that produces intelligible species of the things known by sense in the passive intellect by means of its spiritual power (Suarez 1991, p. 96).²

Gorlaeus, unlike Suarez, dispenses with both the intelligible species and the passive intellect, claiming that sensible species are neither bodies nor spirits (Gorlaeus 1620, p. 223). By denying the materiality of species he implicitly denies that a perception or phantasm of an object composed of such species is material. Gorlaeus also denies that visible species are spiritual but likens them to images. However, given that they are not material, there is no need to posit an intelligible species of the individual object, on top of the sensible species, for the senses already provide the intellect with non-material likenesses of the object. Absent an intelligible species, the need for a passive intellect to receive such species and relate them back to singulars also disappears. Instead, the active powers of the noetic and discursive intellects can operate directly on non-material, image-like sensible perceptions of singular objects.

But Gorlaeus’ denial of intelligible species that yield universal knowledge raises a new problem. Whereas the intellect’s ability to understand objects as individuals is unproblematic, since its immateriality in no way prevents it from receiving the non-material sensible species of an individual object, how does the intellect come to understand the universal properties individuals have in common without an intelligible species? After all, the non-material, image-like species are of distinct, singular, accidental beings given in experience, like a thing’s particular shade of red and degree of heat. The issue is made even more acute by the fact that Gorlaeus argues against the existence of universals in the Fourth Exercise “On the Universal.” This seems in tension with Gorlaeus’ claim that the intellect possesses common notions by which it has true scientific knowledge of the real kinds to which things belong.

At the start of the fourth Exercise “On the Universal and the Singular” Gorlaeus gives two reasons in favor of the real existence of universals, which he will refute. First, those who affirm their real existence point out that

². According to Suarez, this occurs “not by the sensible imagination concurring efficiently with that action, but by being related as matter, or by exciting the soul, or to be sure by being an exemplar. And thus it happens that as soon as the soul cognizes something from imagination, through its spiritual power it depicts, as it were, that thing in the passive intellect” (Suarez 1991, disp.9, q.2., no.12, 3:96).
universals like “human,” “body” and “substance” are truly predicated of extra-mental objects, and since they are affirmed of real singulars, they must be real entities. Second, every science is of universals and so we would only know beings of reason not things themselves if universals were not real (Gorlaeus 1620, p. 77). Gorlaeus denies both claims arguing that universals need not be numerically distinct entities existing in extra-mental objects for our terms to be truly predicated of things, nor must universals be real in this sense in order for there to be true scientific knowledge of mind-independent entities. I will focus on his main argument to refute the first claim as it also provides the basis for his rejection of the second. Like most Aristotelians, Gorlaeus does not deny the existence of universals as concepts; his first argument presupposes that the mind has such concepts. Rather he denies that they must pick out something really distinct existing in the individual object to be truly predicated of it and to constitute scientific knowledge of real things.

Gorlaeus’ first argument begins with the observation that while the whole that exists in reality is one in number, the mind does not apprehend it through one concept. This is because although any one thing has something similar to another as well as something different, the same concept cannot be both of this similarity and difference. Therefore, one concept represents the difference to the mind, and the other the similarity. The two concepts do not pick out a similarity and a difference that are distinguished within the thing itself; rather the mind has the power of considering the similarity without the difference and vice versa. It thereby distinctly conceives of the same thing through different concepts. So the thing is similar to another thing under one reason, and dissimilar to it under another. Gorlaeus then refers to the concept that represents the diversity of one thing from another as an individual concept and claims that “It signifies as by that known singularity, this, here, now” (Gorlaeus 1620, p. 79). The concept of the similarity, by contrast, designates what is both in this thing and that thing, “not indeed one in number, but similar to it; by not representing this, here now” (Gorlaeus 1620, p. 79). He adds that when these (“this, here, now”) have been abstracted by reason, that which remains is understood and is said to be universal and common to many. Gorlaeus likens these concepts to “universal coverings,” indicating that rather than being in things, they are laid upon things. A concept that is one in number, like “animal” can thus be predicated of both man and beast since they are subject to both the latter (namely, the similarity) and the former (the difference). Hence the mind apprehends under one reason [ratio] what in reality are only similar things. No error is committed because the mind does not conceive the thing signified by the universal concept “animal” under the reason of a numerical unity but of a similarity, which is called a formal or
essential unity. Gorlaeus defines the universal properly speaking as the concept abstracted in this manner from the differences, this, here, now. The concept is universal in that it does not represent these differences. (Gorlaeus 1620, pp. 79–80)

It is not clear how Gorlaeus uses the term “formal and essential unity.” According to medieval Aristotelians who take a realist position on universals, this is a real unity that is not a numerical unity, whereas Ockham and the nominalists reject any real unity outside of numerical unity. For Aquinas and his followers, formal unity is the unity of a real specific nature. Such unity refers to the indivisible essence or nature, e.g., human nature, which is essentially one but can communicate itself to one or more individual humans. It is the foundation for the universal unity of the concept; the latter unity, unlike the formal or essential unity of the indivisible essence, is not a real but a logical entity. For Scotus and his followers, universal concepts pick out real common natures, which while not numerically distinct from individuals, nonetheless are formally distinct from the individual nature. These common natures have a formal unity, or as Scotus puts it, a formal identity, and a specific or essential unity and entity that precede the individual, even though they lack the numerical unity required for independent existence outside of individuals (Boulnois 1992, pp. 18, 22–24, 31). By this means Scotus can maintain that while universals are a product of the way the intellect considers individual things, universal knowledge is ontologically grounded in real essences that have an essential unity and entity. If we take Gorlaeus to be relying on these medieval Aristotelian uses of the term “formal unity,” then the universal concept, “human being” while a product of the intellect, nonetheless represents something essential and real in the individual that is common to other individuals of the same species. Hence if we read Gorlaeus to hold a Thomist or Scotist form of realism, there would be a real similarity between Gorlaeus and Elizabeth, due to the formal unity of their shared human nature. This shared nature is a unity distinct from their individual natures, allowing the intellect to truly and reliably predicate the term “human” of both.

Attributing this use to Gorlaeus makes little sense for, unlike medieval realists, he rejects Aristotelian forms in favor of atomism, and each atom,

3. Gorlaeus writes “quoniam non concipit illa sub ratione unitatis numericae, sed similitudinis, quae dicitur unitas formalis aut essentialis” (Gorlaeus 1620, p. 79). His reference to similarity is reminiscent of Boethius’ use of “similitude” instead of “forma” in his second commentary on Porphyry’s *Isagoge*. Where Alexander of Aphrodisias speaks of form, Boethius speaks instead of a likeness that exists both in sensible things, where it is singular and sensible, and as a thought, which is universal and intelligible (Tweedale 1984, pp. 300–302). While there is no evidence that Gorlaeus read Boethius’ commentary, this terminology could have been transmitted via later Scholastics.
for him, is a unique essential entity. Gorlaeus and Elizabeth are for him accidental aggregates of atoms who do not share any atoms between them. Hence, given that aggregates are not realunities, they share nothing which counts as an essential unity. Even if they display similar properties at the perceptual level, how can the intellect, which abstracts its concepts directly from sensible species, penetrate to the unique real essences and formal unities of natural things at the insensible atomic level and pick out common insensible natures at the atomic level via perceptual similarities? Perhaps Gorlaeus assumes that similar qualities of accidental beings, accurately conveyed to our senses by similar visual and tactile species, always reflect real similarities in atomic structure. However, given that sensible species can be produced in the absence of the relevant atomic structures, e.g., by the Devil, this seems like a big assumption. So this is the first puzzle—it is not clear how, in the absence of Aristotelian forms and essences, we are to understand Gorlaeus’ claim that universal concepts like “human being” are grounded in real similarities that constitute formal and essentialunities.

Gorlaeus next distinguishes between two types of abstraction. The first is real abstraction, whereby the universal concept signifies something really abstracted from the known similarities. The second is abstraction by reason, whereby the individuating features of the object (“this, here, now”) are not signified through the concept. The concept does not exclude these differences but neither does it include them, for then it would not be common to all. The differences are simply omitted from consideration. The example Gorlaeus gives is of the proposition “Plato is a man.” The concept “man” cannot signify something which lacks Platoneity because Plato does not lack Platoneity. However, the concept “man” does not designate Platoneity—it omits it from consideration. So when I understand that Plato is a man, I still apprehend something that has singularity but I do not apprehend it insofar as it has it (Gorlaeus 1620, p. 81). Gorlaeus does not give an example of a real abstraction and it is not clear from the distinction alone whether he rejects such abstractions. However, it is clear from the ensuing argument.

Gorlaeus starts with the premise that what is truly affirmed of the individual must be singular. If the concept is appropriated by a real abstraction then it will signify the object really abstracted from the differences. A certain thing (e.g., “man”) is then signified which exists the same in all its individuals and which has been communicated to all of them. In this way, concepts like “man” are properly considered as universals not singulars, for Plato is not the universal genus human being. But given that Plato is singular, and “man” is truly predicated of Plato, then universals like “man” must be singular. In light of this contradiction, Gorlaeus thinks we must reject the premise that “man” is the product of a real abstraction, signifying
a certain thing that exists the same in each individual man. Rather we must conclude that the real thing represented through the universal concept is singular, not universal. He continues by highlighting absurd results that follow when we suppose that the universal has to be in each thing to be truly affirmed of it. These include the multiplication of universals and the implication that each individual is a whole genus and species since it contains the whole universal. By contrast, “if the concept is considered precisely insofar as it is a universal, it belongs to no thing” (Gorlaeus 1620, pp. 81–2).

This part of Gorlaeus’ argument is reminiscent of Aristotelian theories of the nominalist variety. On this view, there are only individual natures. Now suppose there were real abstractions producing universal mental concepts like “human being” which do not include any of the differences between Plato and Socrates. Gorlaeus argues, these concepts would still have to be individual, for otherwise, they could not be truly predicated of individuals. But these concepts cannot be both individuals and universals. Therefore, we must reject real abstraction and affirm that universals are individual mental concepts representing both similarities and differences. The intellect thus performs an abstraction of reason whereby it selectively focuses only on the similarities in extending the individual concept it has formed of Plato universally to other humans, like Princess Elizabeth. There is no real essence of human being distinct from the individuals that the universal produced by this abstraction of reason picks out. This nominalist position appears more in sync with Gorlaeus’ atomism in that it does not posit any real essences or formal unities beyond the insensible simple essences of atoms. This is consistent with Gorlaeus’ earlier claim that similarity and difference are non-essential entities in the category of accidental or aggregated being. However, it seems to contradict his appeal to similarity as a formal and essential unity and the realist implications of this terminology so this is the second, related puzzle.

There are several ways one could try to resolve these puzzles. First, perhaps Gorlaeus misappropriates the term “formal and essential unity” and uses it in a different sense from his Aristotelian predecessors. Perhaps “formal unity” means something weaker than a real, specific form communicated to all members of a species, as Thomists held, or a common nature formally distinct from the individual nature, as the Scotists held. In other words, Gorlaeus could be using the term to refer to a unity we attribute to a set of accidental aggregate beings, rather than the real essences of atoms and their arrangements which constitute the real natures of these perceptible aggregates. But then a formal essence would be more like a logical

4. Suarez also makes this kind of argument (Suarez 1964, p. 45).
form or logical essence, i.e., a definition that is strictly the product of the human mind rather than an essential, common feature of real individuals. To use Descartes’ example, since the automaton wearing a suit and hat looks the same as a real man, we would group these together into one kind if we were relying strictly on our sensory perceptions of these aggregate individuals. However, the universal concept “human being” that we abstracted on this basis would not allow us to reliably pick out only real humans who share the same hidden arrangement of atoms rather than entities with atoms arranged into robot parts. Such a strictly logical essence would be a being of reason, which is at odds with Gorlaeus’ commitment to true scientific knowledge of things through a combination of our notions of their properties. Given his commitment to a science based on knowledge of real beings, it seems unlikely that Gorlaeus uses the term “formal unity” in the sense of a strictly logical essence imposed on nature by us. A second possible reading is that Gorlaeus is just rehearsing various Aristotelian arguments on universals without advancing a coherent position of his own. But this does not sit well with the text as Gorlaeus presents himself as arguing against existing views so as to advance the true view of universals.

The third and last possibility is that Gorlaeus draws on a late Aristotelian theory that combines different features of the main medieval Aristotelian positions on universals. This would account for the odd tension between Gorlaeus’ realist terminology and the nominalist overtones of his arguments against real abstraction. A readily available Aristotelian theory in Gorlaeus’ intellectual context is Suarez’s. Gorlaeus and Suarez give the same reasons for the immaterial intellect and its knowledge of singular things and universals. These arguments were common and do not rule out other means of transmission, but given Suarez’s predominance in Gorlaeus’ context, he is a very likely source. I now examine Suarez’s theory of formal unity and abstraction to identify less widely held views Gorlaeus also shares with Suarez. I show that this background resolves the puzzles generated by Gorlaeus’ commitments.

Suarez shares Gorlaeus’ metaphysical principle that every real entity is indivisible and incommunicable. Quoting Aristotle, Suarez affirms that to be one is to be an individual being. Since all beings in the world are individuals, there could not be some true or real being that failed to be both individual and singular. It follows that there could not be, in reality, some true and real unity besides a numerical and individual unity. But numerical unity involves both indivisibility and incommunicability to inferiors; hence every real being is indivisible and incommunicable (Suarez 1964, p. 29). In addition to this numerical undividedness, which Suarez calls “material,” there is also in things an essential or formal undividedness. For example, several human beings, though materially or in number
distinct, are nevertheless of the same essence or nature. Suarez concludes that formal unity is thus also found in nature, and he highlights that Thomists and Scotists agree that a formal unity that is in some way distinct from numerical unity is found in real things. Disagreements between these two realist camps consist in explaining what exactly this formal unity is (Suarez 1964, pp. 29–30). Suarez then proceeds to carve out his own view against this background, articulating a position close to Gorlaeus’ odd use of the term “formal or essential unity.”

Suarez identifies three positions on the nature of formal unity. The first is the Scotist view. It comes in more than one variety (the details do not concern us) each of which holds that “the nature has of itself and through itself some universality, so that even really existing in individuals themselves, it retains it…” (Suarez 1964, p. 41). The second is the view defended by Fonseca that “the nature existing in individuals is not actually universal, but nevertheless by no means derives its being universal from the intellect alone but rather is actually universal of itself and prior to any contraction to individuals, and moreover, prior to any existence whether in the intellect or in fact itself” (Suarez 1964, p. 43). Suarez rejects these and instead affirms the third view that “natures become actually universal only through the operation of the intellect, although there is some antecedent basis on the part of things themselves on account of which the things may be said on their own part to be universal in potency” (Suarez 1964, pp. 43–4). In other words, formal unity and universality come apart for Suarez. Every nature or formal unity, as a real thing, is one and hence incommunicable. As Suarez puts it, “although some individual may be, on the part of the thing, formally one, apart from the thinking of the mind, nevertheless, several individuals which are said to be of the same nature are not one thing with true unity which is ‘found in’ the things, but are one thing only fundamentally or through the intellect” (Suarez 1964, p. 36). However (and this makes Suarez’s view a type of realism) the individual, non-communicable mind-independent formal unity contains some real basis (fundamentum in re) by which it can be said to be potentially universal. Nonetheless, it only becomes actually universal through a mental act.

5. Jim Ross clarifies:

The realism of Suarez consists entirely in the fact that what formal concept the possible intellect possesses and employs in considering a given singular or group of similar singulars is determined not by the mind alone, but is determined formally by the thing; the form in the particular thing becomes the formal cause of the content of the impressed species, and, derivatively of the formal concept in the possible intellect. Thus universal concepts, like the singular concepts (and for Suarez there are both), are not entirely products of the mind and the mind is not entirely free to form concepts for
Because of his ontological commitment to the strict oneness of being, which Suarez shares with Gorlaeus, the nature of universality, which consists in both unity and communicability precludes its occurrence in things independently of the intellect. Suarez explains the problem:

For, if the nature were not in some way one, then it would not be universal at all, but would be a multitude or aggregate of things; if, however, it were not disposed to be in many, it would not be universal but singular; and it is indeed necessary that it be in many things in a manner opposed to singularity or individuality, that is, that it be in many inferiors which can be multiplied and enumerated under the common notions. Therefore, these two, unity and community, are to be explained in such a way that it will be clear that the aspect peculiarly constitutive of the universal is not to be found in things apart from the intellect. (Suarez 1964, p. 44)

However, despite the fact that the intellect has to be responsible for the (in reality) incompatible features of unity and community that characterize universals, there is something potentially universal in the real natures of things insofar as they are really similar and have the disposition to be unified under one concept: “the universal, as universal, is conceived as actually undivided, insofar as it is such, and as dispositionally divisible and communicable; however, things insofar as they are really similar in nature, are actually divided and dispositionally or fundamentally ‘unifiable’ (as I say) in one nature universally conceived” (Suarez 1964, p. 48).

The real basis (fundamentum in re) in things that constitutes the universal in potency to be actualized by the intellect is for Suarez similarity. Like Gorlaeus he appeals to real similarities between individual natures of things to provide the ontological grounding for the formal unity by which the intellect identifies individuals under the same formal notion and definition.

We confess, therefore, that any formal unity insofar as it is in reality individual and singular, but that it differs nonetheless in notion from individual unity, since formal unity of itself and from its proper concept expresses undividedness in the aforementioned essential notes; individual unity expresses undividedness in the entity itself. Whence, formal unity implies in the thing a basis of similarity with another thing of the same nature; individual unity, however, implies absolutely and simply a basis of distinction; and finally formal unity

its own purposes; rather what concepts are formed is also a function of what things there are and what things are experienced, since the forms in things are the fundamentum or formal determinants of the concepts in the mind. This is all the moderate realism there is in Suarez (Suarez 1964, p. 25).
implies a basis of communicability at least with respect to concept; individual unity, however, implies entire incommunicability, in reality as well as in concept. (Suarez 1964, p. 38)

Like Gorlaeus, Suarez does not take this formal unity to involve a shared human nature that goes beyond similarity. Gorlaeus’ example illustrates more cryptically the points Suarez elaborates in these passages: there is no distinct formal unity in Plato, also shared by Socrates, which corresponds to our definition of a man and which can be pulled apart from Plato’s individual “Platoneity.” Rather there are just real similarities between Plato’s and Socrates’ individual natures which provide the real basis for our universal concept of “man.”

Given these affinities between their views, it is highly probable that Gorlaeus shares Suarez’s theoretical commitments on the nature of formal unity. When Gorlaeus claims that the mind conceives the thing signified by “animal” under the reason of a similarity, and contrasts this to a numerical unity, characterizing it instead as a formal or essential unity, he appears to articulate a view very close to the one Suarez defends. The advantage of this reading of Gorlaeus is that it solves our first puzzle. On this third interpretation, Gorlaeus does not misuse the term “formal or essential unity.” Rather he defends a type of realist view that we find among late Scholastic Aristotelians, like Suarez. It is clear now that Suarez’s brand of realism is particularly suited to Gorlaeus’ atomist metaphysics. On a Suarezian view of universals, Gorlaeus need not attribute any kind of real common or specific nature distinct from or prior to the aggregates of atoms that make up the beings we encounter in the world. Rather numerical unity and essences in the strict sense pertain only to atoms and God. Nonetheless, aggregates of atoms are not thereby reduced to mere multitudes lacking any real basis for the mind-dependent universals under which we unify them. Instead aggregate beings constitute formal unities which through their real similarities (perhaps at the structural level in the particular arrangements of atoms) to one another have the potential to be unified under certain universal concepts. This potential is actualized when the intellect abstracts from our sensory species of these macroscopic aggregate beings and creates a universal concept by omitting perceptual differences. In this way, the universal “human” can be truly predicated of both Gorlaeus and Elizabeth, for though there is no distinct nature of humanity over and above their atomic parts that constitutes a numerical unity, there are real similarities between each aggregate of atoms. Namely, there is a formal unity, grounded in real similarities, with the potential to be communicated to other individuals and become universal when the intellect forms an abstract concept that omits all the differences between Gorlaeus and Elizabeth.
Gorlaeus’ views on abstraction are also in line with Suarez’s. On Suarez’s account, common natures (communes rationes) have only mediate existence through singulars and so if we removed singular things, the common natures would also cease to exist. The common nature is thus only conceptually distinct from the individuating principle, which for Suarez is the thing’s form. Now since the common nature is the basis for our universal knowledge, this creates a problem. Given that the common nature is incommunicable and only conceptually distinct from the individual nature, how do we know that we are not creating a being of reason when we abstract what is common from the phantasm? (South 2002, pp. 807–09) This problem is identical to the concern Gorlaeus addresses when he refutes the second assumption about universals, namely, that if they are not real, we would only know beings of reason. Suarez responds:

First it must be established that those natures which we denominate universal and common, are real and exist in things themselves; for we do not fabricate them mentally, but we rather apprehend them and understand them to be in things, and we produce definitions, construct demonstrations, and we seek knowledge of them as thus conceived. (Suarez 1964, p. 39)

The target here is the nominalists who according to Suarez “falsely deny that demonstrations and definitions are given about things, since sciences are not concerned with names or our formal concepts, but directly with things or objective concepts” (Suarez 1964, p. 39). Gorlaeus likewise rejects this feature of nominalism.

Suarez avoids these nominalist consequences of making actual formal unity a function of the intellect by appealing to what South labels the “Containment Principle.” According to this principle, the intelligible species whereby I know Gorlaeus as an individual also contains (potentially) all the broader genera, such as “humanity,” “animality” and “substance-hood.” Therefore, when I intellectually know Gorlaeus as an individual, I also know all the common natures that apply to him (South 2002, p. 812). Attaining such universal knowledge involves no less than three distinct types of abstraction for Suarez. First, the agent intellect de-materializes the content of the phantasm in the imagination and produces an intelligible species that gives me intellectual knowledge of Gorlaeus as an individual. This is what Suarez refers to as the physical universal, or essence of the thing (South 2002, pp. 814, 816–17). The potential intellect then performs two further kinds of abstraction, one of which yields the metaphysical universal. By means of a formal abstraction the potential intellect conceives of the essence of the thing apart from its properties, i.e., it conceives of Gorlaeus’ humanity without his particular personality and body at
the present time and place (what Gorlaeus labels “this, here, now”). The intellect in forming a metaphysical universal thus represents Gorlaeus’ individual humanity as common and indifferent to many things. However, universality is not an intrinsic property of Gorlaeus since the common natures contained in his proper nature are singular and incommunicable. Rather the universality of Gorlaeus’ humanity is extrinsically conferred by the intellect (South 2002, pp. 814, 816). But formal abstraction does not yet give us the knowledge that Gorlaeus’ human essence can be predicated of many things. Thus properly speaking knowledge of the universal comes from universal abstraction, or what Suarez calls, “as such” (ut sic) abstraction.

Suarez speaks of the universal as being hidden and confused in the singular. Universal abstraction makes what is confused clear, which implies that although higher genera are contained in the lower individuals they are not immediately accessible to the understanding (South 2002, pp. 814–15). This third and last type of abstraction yields the logical universal, which is the universal in the proper sense. It results from the application of the metaphysical universal to the nature as if the universal existed in the thing. In other words, it is the universality of the relation between the metaphysical universals and the thing’s nature (South 2002, pp. 816–17). This relation is discovered through a process of comparing phantasms of different individuals:

The intellect when it knows a singular through a proper species understands different singulars—through different species inasmuch as they were abstracted from different phantasms. Now, these species of different singulars agree partly in representation when they represent the same common predicates, but differ partly because they represent them contracted in a different manner. Therefore the intellect has the power to consider the individuals themselves such as they are and also to consider that which appears to be common to these individuals. That latter is to consider the universal. (quoted in South 2002, p. 812)

Now, Gorlaeus does away with the passive intellect and intelligible species, a move consistent with his denial of Aristotelian forms. He retains sensible species but since he denies that they are material, there is no need for a passive intellect to de-materialize them and by abstraction produce what Suarez calls the physical universal. This is the essence or form of the thing that gives us intellectual knowledge of the individual. For Gorlaeus, by contrast, the sensible species just directly give the intellect knowledge of the aggregate individual. But if we compare the rest of Suarez’s theory to Gorlaeus’ then it is clear that Gorlaeus does not deny the existence of
the logical universals arising from a comparison of the similarities and differences in our cognitions of individual things. And so he does not deny what Suarez regards as universals, properly speaking, despite his rejection of physical universals. However, Gorlaeus is intent on resisting any talk of the universal existing in the thing, which at first makes it look like he must regard such logical universals as mere beings of reason with no basis in things.

Recall that Gorlaeus argues against real abstraction and infers from this that we must reject the premise that “man” is the product of a real abstraction, signifying a certain thing which exists the same in each individual man. This argument appears to deny the Containment Principle whereby Plato’s proper nature is supposed to contain the common nature of man. Gorlaeus’ view appears on the surface to be at odds with Suarez’s. However, we have to keep in mind that for Suarez, the common nature is only conceptually distinct from the proper nature of the individual. This is perfectly consistent with Gorlaeus’ claim that by reason we distinguish Platoneity from man and omit consideration of the former when we apply our universal concept of “man.” In reality, the two are not distinct on both Suarez’s and Gorlaeus’ views. It is true that what Suarez calls the physical universal is inaccessible to scientific knowledge for Gorlaeus, since the simple essences of his real beings are the essences of the imperceptible atoms. This is a genuine difference between their theories. However, it does not preclude Gorlaeus from accepting logical universals, in Suarez’s sense, along with an analogue to Suarez’s metaphysical universal in the realm of accidental aggregate beings. In other words, the image-like sensible species on which Gorlaeus’ inherently active intellect operates come with built-in similarities among the sensible qualities and affections of accidental beings. From these similarities among sensible species, the intellect abstracts the metaphysical universal by omitting the differences from consideration. Such similarities, while only conceptually distinct from the individual accidental being and hence not communicable to other individuals, have the potential to be rendered universal and related to really similar individuals by the intellect, thus yielding an objective universal concept that can ground scientific knowledge.

If we attribute this view to Gorlaeus, then we can account for his claim that the notions, by which we place things into kinds, when properly arranged, give us true knowledge of accidental beings studied by physics. On this reading, Gorlaeus holds that the universal concepts abstracted by reason are grounded in the common elements (perhaps arrangements of atoms) that are confusedly present in the similarities displayed in sensible species of macroscopic things. If we combine this with Gorlaeus’ optimism that, absent malicious intervention by the Devil, visible and tactile species are copies of things, then we have a basis for reliable knowledge of the accidental
aggregate beings we observe in nature. Given that Gorlaeus shows no indication of sharing Descartes’ skeptical concern, namely, that different atomic structures could produce similar sensory experiences, he seems to take knowledge of the different kinds of accidental beings to indicate essential differences at the atomic level of real being. In any case, he does not explicitly consider these kinds of skeptical worries in his writings. These worries do occupy Descartes, and his successors, like Locke. Hence these later philosophers must either reject the Aristotelian theory of universals in order to maintain scientific knowledge of real essences, which is the route Descartes takes, or in retaining an Aristotelian theory, limit our knowledge to the realm of nominal essences, as Locke does.

The third possible reading of Gorlaeus, which draws on Suarez’s theory, is the most charitable one as it allows us to resolve the puzzles generated by Gorlaeus’ commitments. On this interpretation, Gorlaeus means something weaker than a real specific or common nature when he uses the term “formal or essential unity” since he clearly denies the existence of distinct Aristotelian essences, like humanity, within macroscopic individuals. However, he also means something stronger than a mere being of reason for the formal unity in question is a metaphysical essence which, though it results from an extrinsic denomination of the intellect, is nonetheless grounded in mind-independent similarities at the level of accidental being. These perceptible similarities contain within them mind-independent formal unities universalizable to other members of the same kind. The potentially universal formal unity becomes actually universal when the intellect forms a concept by omitting the differences from consideration. On this reading, Gorlaeus’ theory of scientific knowledge also escapes the dilemma that confronts Descartes and Locke. Gorlaeus can embrace atomism and yet retain scientific knowledge based on at least one type of Aristotelian universal if we attribute to him something close to Suarez’s view. Gorlaeus claims that scientific knowledge is built up from a plurality of “notions,” which when correctly arranged, agree with things. Such notions must, for Gorlaeus, originate from sense and be known through similitude with things sensed, and yet on this reading we can account for the fact that Gorlaeus takes such notions to be reliable foundations for true scientific knowledge of the causes of accidental beings. These notions are universal concepts which reveal to us mind-independent similarities that allow us to classify natural things into real kinds, as well as individual differences by which we understand them as individuals.

In conclusion, if we make the effort to reconstruct a consistent view from Gorlaeus’ statements, then the most plausible way to fill in the gaps left by his surviving works is to attribute to him elements of a late Aristotelian theory of universals found in his intellectual environment. Given
our limited knowledge of Gorlaeus’ life and the full range of theories of universals available to him, we cannot currently definitively rule out the possibility of other influences. However, the available historical and philosophical evidence heavily favors reading him in light of the theory of formal unity and universals that Suarez defends. On this late Aristotelian theory, which Gorlaeus would have encountered during his studies at the University of Leiden, the intellect understands both singulars and universals; formal unity is, absent an act of intellect, actually singular and only potentially universal; and as a result common natures are only conceptually distinct from individual ones. All these features of Suarez’s view mesh well with Gorlaeus’ various claims and commitments. Moreover, if we read Gorlaeus as rejecting only one of the three types of universals maintained in Suarez’s theory, namely the physical universal, while accepting something like Suarez’s metaphysical universal, then we can reconcile his commitment to universal notions that give us real (as opposed to rationally constructed) scientific knowledge of sensible natural objects with his arguments against real (in the sense of physical) universals.

If this interpretation turns out to be not just plausible but correct, then Gorlaeus’ theory of knowledge also provides us with an interesting alternative to the skeptical quandary into which Descartes led subsequent proponents of atomist and corpuscularian matter theories. By identifying and examining two puzzles raised by his commitments, I have sharpened our view of the kinds of philosophical considerations at stake when early modern philosophers struggled to reconcile their new matter theories with the need to ground scientia in some kind of universal knowledge in the absence of direct experience of essential properties of objects. Gorlaeus’ transitional theory thus also serves to delineate the problem space within which later proponents of corpuscularianism developed their theories of universals and scientific knowledge.

References

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