A curious feature of Descartes’ account of the material world emerges from his attempt to accommodate the Catholic doctrine of the Eucharist. According to the official version of this doctrine, established during the thirteenth session of the Council of Trent (1551), the entire substance of the Eucharistic bread and wine is converted into the substance of the body and blood of Jesus Christ, “with only the species [specie] of the bread and wine remaining”.

A relevant detail is that the remaining “species” or accidents subsist without inhering in any substance: neither in the substance of the elements, which no longer exists, nor in the substance of Christ’s body and blood, which is not a suitable subject for such accidents. In his Objections IV, directed against the Meditations, Antoine Arnauld has this particular detail in mind when he notes that Descartes’ claim that there are no bodily “accidents, but only modes, which cannot be understood, and indeed cannot exist, without some substance in which they are present” seems to be incompatible with the revealed truth that “when the substance of the bread has been removed from the Eucharistic bread, the accidents remain by themselves”. In his Replies to Objections IV, Descartes attempts to address Arnauld’s concerns by identifying the sensible species of the Eucharistic bread with “the surface [superficie] that is common to the individual particles of the bread and the bodies that surround them”, which surface is itself the source of our sensations of this bread. He then insists this surface can continue to exist and cause the same sensations, even when something else has replaced the bodies they originally contained. In this way, according to Descartes, his physics is fully compatible with the Catholic doctrine of the persistence of the sensible species in the Eucharist.

3. RO IV, AT VII.251. In support of this identification, Descartes notes that it is the surface that is the cause of our perception of the sensible qualities of the Eucharistic elements.
4. For an excellent discussion of the exchange between Arnauld and Descartes on this issue, see Menn (1995). See also note 40.
One may well be tempted at this point to dismiss this whole appeal to persisting bodily surfaces as a desperate—and perhaps insincere—attempt on Descartes’ part to render his physics compatible with Catholic theology. Such a temptation could serve to explain why his account of the metaphysics of surfaces has received relatively little attention in secondary literature. Though I concede in the end that certain aspects of this account are untenable for reasons internal to Descartes’ own system, I nonetheless think there is much more to this account than initially meets the eye. Such an account is in fact linked to a philosophically significant medieval debate over whether certain mathematical “indivisibles” (indivisibilia), including surfaces, really exist in nature. Moreover, Descartes’ appeal to the notion of modes in his discussion of surfaces bespeaks the influence of the late scholastic Francisco Suárez (1548–1617), who introduced a fully regimented category of mode into early modern metaphysics. However, it is interesting that in his own contribution to the medieval debate, Suárez does not anticipate Descartes’ identification of surfaces with modes. His suggestion is rather that surfaces are special “constituents” of bodies that differ from the parts of which these bodies are composed.

My foray into this history of the metaphysics of surfaces begins with a brief survey of a debate from the later medieval period that has its source in Aristotle, one that pits “realists”, who posit indivisible entities in bodies, against “nominalists”, who deny the existence of any such entities over and above divisible bodily parts. I then turn to Suárez, who offers the “moderate realist” view that in addition to the divisible parts that compose bodies, there are indivisible surfaces, as well as indivisible points and lines, that are “really distinct” from those parts. In fact, it is this emphasis on the real distinction that draws attention to the puzzling fact that Suárez refrains from identifying surfaces with bodily modes. After my consideration of this puzzling feature of Suárez’s system, I return to Descartes, attributing to him a “modal realist” account of surfaces that I take to provide an advance over Suárez’s moderate realism. Yet I also argue that Descartes’ account is burdened by the presence of a version of Suárez’s claim that surfaces are really distinct from the particular bodies they contain. I should warn at the outset that though I compare Descartes to Suárez on this issue, I make no claim that Suárez’s discussion of surfaces directly influenced Descartes. Indeed, I think the very fact that Descartes takes his own modal realism to reflect a standard scholastic view of surfaces indicates that he likely was unaware of the intricacies of Suárez’s position. Nonetheless, in brief concluding remarks I draw on a certain narrative concerning the development of early modern metaphysics to illustrate the importance of Suárez for an understanding of Descartes’ treatment of surfaces.

I. The Medieval Debate

As in the case of other medieval discussions of natural philosophy, it is best to start our consideration of the later medieval debate over surfaces with the views of Aristotle. In the Physics, Aristotle stipulates that two parts are continuous when “their extremities are one”. This common extremity is a surface that is indivisible in one dimension insofar as it has length and width but not depth. This is one of three spatial indivisibles, with the other two being the line, which is indivisible in two dimensions insofar as it has length but not width or depth, and the point, which is absolutely indivisible insofar as it has neither length nor width nor depth. Aristotle nonetheless emphasizes that the more extreme realist position that indivisibles compose continuous quantities.

5. Though medieval nominalism is often associated with the denial of universals in nature, it is better understood as a collection of different attempts to impose ontological parsimony on a variety of fronts. See an overview of this movement in Normore (1987). As we will discover, medieval realism also comes in a variety of forms, even with respect to the particular issue of the relation of indivisibles to continua.

6. As indicated presently, this sort of moderate realism is to be contrasted with
these indivisibles cannot compose higher-dimension continua since they lack extremities in the relevant dimensions, and so cannot have extremities that are one in those dimensions. Thus, zero-dimensional points cannot compose a one-dimensional line, lines cannot compose a two-dimensional surface, and surfaces cannot compose a three-dimensional body. Rather, the line must be composed of divisible lines, the surface of divisible surfaces, and the body of divisible three-dimensional parts.8

Though it is clear from what Aristotle says that surfaces, along with lines and points, are not parts that compose higher-dimension continua, there is still the question of what precisely the ontological status of the indivisibles is. Indeed, Aristotle himself expresses bewilderment on this issue in the *Metaphysics*. On the one hand, he notes that indivisibles seem to be even more substantial than body since “body is bounded by these; and they are thought to be capable of existing without a body, but a body cannot exist without them”. On the other hand, he observes that they are not generated or corrupted in the manner of a substance, but rather are created and destroyed instantaneously. When two bodies become continuous, their previously separate boundaries are instantaneously destroyed and immediately replaced by a common boundary, and when they separate, their common boundary is instantaneously destroyed and immediately replaced by two new boundaries.9 In the end, Aristotle can only conclude that “it baffles us to say what being is and what the substance of things is”.10

Aristotle left it to others to sort out the metaphysics of indivisibles in general, and of surfaces in particular. In the later medieval period, discussions of this issue repeatedly cite a particular post-Aristotelian argument for the real existence of indivisibilia.12 This argument involves the case of a perfectly spherical body touching an absolutely plane body. As William Ockham (ca. 1285–1347), an opponent of the argument, summarizes it:

I ask whether [the perfect sphere] touches at something divisible, or at something indivisible. The first cannot be given, because at whichever divisible you choose, there will be a curve, and consequently the whole [divisible] will not fit the plane, but there will be an intermediate body [corpus medium] between some part of the curve and that place. If the second is given, we have what the argument proposes to show.13

In order to touch the plane at more than one point, the sphere must have some part of its outer boundary that is linear. However, the boundaries of the sphere are perfectly curvilinear. The only option, then, is that the sphere touches the plane at an indivisible point. A similar argument can be extended to lines and surfaces. Just imagine that a perfect sphere or perfect cylinder rolls across the plane from the point of contact by means of a continuous motion. In this way the motion of the sphere traces a line, and the motion of the cylinder traces a surface.

Even if this argument is understood to establish the real existence of indivisibles, there is still the question of the acceptability of Aristotle’s claim that indivisibles cannot compose three-dimensional continua. There were medieval thinkers — such as Henry of Harclay (1270–1317) and Walter Chatton (1285–1344) — who insisted contrary to the Aristotelian position that higher-dimension continua are composed of indivisibles. We can call this position extreme realism to

9. *Metaphysics* III.5, 1002a26–7/A II.1582. But cf. the claim in *Metaphysics* XI.2 that lines and surfaces ‘are not separable substances, but sections and divisions’, and that ‘all of these are in other things and none is separable’ (1060b14–18/A II.1675–76).
12. The argument can be found in Averroes; see Zoubow (1961: 61–2). However, the particular example of a bronze sphere touching something straight at a point can be found in Aristotle; see *On the Soul* I.1, 403a13–4/A I.642.
indicate the radical view that at a fundamental level of extension, only *indivisibilia* exist. Indeed, for such thinkers, the sphere argument indicates not only that indivisibles exist, but also that, for instance, the continuous line traced by the rolling sphere is composed of indivisible points. However, more prevalent during this period was the view of those—perhaps Thomas Aquinas (1225–1274) but certainly later Thomists such as Thomas Cajetan (1469–1534) and Domingo de Soto (1494–1560)—who accepted the Aristotelian account of composition but nonetheless posited indivisibles in nature in addition to the divisible parts that compose continua. We can call this view *moderate realism* in order to indicate the result—in opposition to extreme realism—that the fundamental level of extension includes divisible parts as well as *indivisibilia*.

In contrast to these forms of realism, there is the *nominalist* position—as represented in the work of William Ockham (ca. 1287–1347, Adam Wodeham (ca. 1298–1358) and John Buridan (ca. 1295–1358)—that endorses Aristotle’s conclusion that indivisibles cannot compose continua, but that also rejects the view that there are limits of continua over and above their constituent parts. There are various nominalist responses to the sphere argument. Thus, Ockham

14. There is a discussion of the extreme realist position in Zupko (1993: 159–62); see also Murdoch (1982b: 571–8). From an Aristotelian perspective, of course, the position is faulty, since points cannot compose continua insofar as they lack extremities they can share with other points.

15. Suárez says this view “seems to be” that of Aquinas and that it “is common in his school”, citing Cajetan and Soto, among others; see DM [= Suárez 2009] XL,5.9, II,553. In this passage, he also attributes the view to Scotus, though Scotus himself understood it in terms of a theory of distinctions different from that of the Thomists (see note 19). There is a discussion of Scotus’ defense of the reality of the indivisibles in Cross (1998: 133–8).

16. It might be thought that the success of the analysis of continuity offered by Richard Dedekind (1831–1916) constitutes the victory of extreme realism over moderate realism, since a continuum can be constructed on this analysis from sets of points. However, on intuitionist views of mathematics, Dedekind’s construction of continua from sets of more than denumerably many points is unacceptable, and even if it is acceptable from a mathematical point of view, it is perhaps questionable whether any such construction can accurately represent continua in nature. For discussion, see Bell (2013).

sometimes takes the hard line that the sphere does not in fact touch the plane, whereas Wodeham proposes an alternative notion of touching on which the two can be said to touch at a divisible point. The common position, however, is that no point—and equally no line or surface—exists as an “absolute” being in nature. This position was thought to have a basis in Aristotle himself insofar as he distinguishes abstracted mathematical quantity from sensible matter.

One can understand the differences between nominalism and its main medieval competitor, Thomistic moderate realism, in terms of a metaphysical theory of distinctions shared by both. According to this common theory, there is a mutually exclusive and exhaustive division between two kinds of distinction, the first a “real distinction” among non-identical *res*, and the second a “distinction of reason” among different ways of conceiving one and the same *res*. According to the Thomistic moderate realist, *indivisibilia* are really distinct from the higher-dimensional objects they limit: point from line, line from surface, and surface from three-dimensional body. For the nominalist, by contrast, indivisibles are merely ways of conceiving three-dimensional bodily parts, and so are merely distinct in reason from those parts. Thus, for instance, the surface two such parts share is simply the relation we conceive them to bear to one another when they are united in a continuum. The surface itself adds no new *res* to parts so united. On one nominalist argument, this conclusion is confirmed by the fact that were God to take away the surface from the parts, there would be no change in the dimensions of the parts themselves, since
the surface has no depth. But then the surface provides nothing that cannot be provided by the parts themselves. Here we see a rejection of a sort of realism that requires the indivisibles either to constitute divisible parts (extreme realism) or to remain distinct in reality from them (moderate realism).

As it is with surfaces, so it is with points and lines, which for the nominalist are merely ways in which we conceive of three-dimensional bodies.21 When Suárez later entered into the debate over indivisibilia, he took a traditionalist stance in defending a version of Thomistic moderate realism over this sort of nominalist position. However, he also deviated from a view shared by Thomists and nominalists alike when he introduced a new kind of distinction intermediate between the real and rational distinctions. It turns out that this distinctive feature of his system calls into question certain aspects of his own account of surfaces and the other indivisibles.

II. Suárez’s Moderate Realism

Suárez discusses the indivisibles in Disputatio XL of his Disputationes Metaphysicae (1997), which is devoted to continuous quantity, a species of the Aristotelian accidental category of quantity.22 The main contrasting view is that of the nominalists, though Suárez also mentions other intermediate views that allow for the reality of some indivisibles but not others.23 Suárez himself takes the sphere argument to show that contact at a point “occurs in some real entity that formally exists in the thing; and yet it occurs in an indivisible thing; therefore such an indivisible entity exists formally in the thing itself”.24 To the Ockhamist denial that there is in fact any contact here, Suárez’s response is dismissive: “This is incredible in and of itself [per se], for what could impede real contact?”25 It is simply obvious for Suárez that the sphere must make initial contact with the plane prior to any compression of parts due to its descent. But if the point can be admitted, so too can the line and the surface: These also formally exist in something as an indivisible entity. Yet what makes Suárez’s position a version of moderate realism is that it endorses the Aristotelian argument that indivisibles cannot exist in continua as constitutive parts. Appealing to Aristotle’s view in book VI of the Physics, Suárez concludes that indivisibles that “are not parts are however components in some way [aliquo modo componentia]”.26

Suárez indicates that these indivisible “components” are res-like elements when he argues that they are “really distinct” from each other and from three-dimensional parts. Though Suárez’s notion of a real distinction does not require that really distinct elements can exist in separation, he nonetheless accepts as “very probable” the argument that, in the absence of special countervailing considerations, one has reason to hold that really distinct items are mutually separable.27 In other intermediate views: (i) that only terminating limits are real and not the continuative limits found in continua (XL.5.13, II.554–5), (ii) that only surfaces are real and not the other indivisibles (XL.5.35–7, II.555–6), and (iii) that only external surfaces are real and not internal surfaces (XL.5.21, II.557). Suárez’s basic argument is that these intermediate positions fail to provide adequately principled reasons for accepting the reality of certain indivisibles but not others.

20. On the version of this nominalist argument in the seventeenth-century work of Libertus Fromondus, see Palmerino (2015: 26–7).
21. My summary of the nominalist position follows Suárez’s discussion of it in emphasizing its metaphysical aspects; see DM XL.5.2–6, II.551–2. However, there are also semantic considerations here that, as the label indicates, were particularly important for the nominales themselves. For further consideration of these aspects of nominalist accounts of the indivisibles, see Murdoch (1981; 1982a; and 1982b), Stump (1982), McCord Adams (1987: 1.201–13), Goddu (1999), and Spade (1999).
22. For a discussion of this disputatio, see Secada (2012).
23. On Suárez’s discussion of the nominalist position, see note 21. This discussion is followed by a summary of the version of Thomistic moderate realism that Suárez accepts (XL.5.9–12, II.553–4), and then by a discussion of three
any event, he is assuming in his discussion of indivisibles that the sort of real distinction that applies in this case involves mutual separability. The separability of a particular part of a line from the indivisible that limits it can be seen from the fact that that same part can exist as either continuous with or separated from another part of a line. But then the same part can possess either “continuative indivisibles” (indivisibilia continuantia), as Suárez calls them, which are present when the part is continuous with its adjacent part, or distinct “terminating indivisibles” (indivisibilia terminantia), in his terms, which are present when the part exists in separation. Suaúrez admits that a finite part must have some indivisible limit, whether continuative or terminating. But his main point here is that it does not have to possess any particular such limit. Thus the limit cannot be identified with the part, which would need to be the case if there were only a distinction of reason between the two.

If the real and rational distinctions were exhaustive, this argument would perhaps suffice to show a real distinction in this case. However, it is a noteworthy feature of Suárez’s metaphysics that it includes a third kind of distinction in addition to the real and the rational. This is the “modal distinction” (distinctio modalis) that holds between a res and its modus. In some ways, the mode is identical to the thing it modifies, as shown by the fact that it cannot exist without that thing. In this case, there is only one res, and so a real distinction cannot apply. Yet a thing can be distinguished in reality from its mode, as shown by the fact that it can exist without that mode. Thus, there is not merely a distinction of reason between different ways of considering the same res. What is required is a different sort of distinction, intermediate between the other two, that involves only a non-mutual separability of a res from its modus. Suárez notes that this sort of distinction can be called real insofar as it is not merely an “extrinsic denomination” deriving from the mind (par. 16, I.255; cf. DM VII.1.27, I.260). Thus when he speaks of a distinction in reality, he sometimes means to include a modal distinction, rather than simply a real distinction in the strict sense.

30. For discussion of Scotus’ two kinds of intermediate distinction, see King (2003: 22–6). However, Descartes’ exchange with Caterus reveals that later thinkers could confuse these two distinctions; see note 59.


32. Pasnau (2011: 253). Though Pasnau does not provide the source of the textbook claim, it is in fact from Doyle (1998).

33. Pasnau (2011: 255). Menn (1997) is the seminal discussion of Suárez’s introduction of the metaphysical notion of mode. It should be noted that Suárez does cite earlier sources for his notion of mode, particularly the work of his older Jesuit contemporary Pedro da Fonseca (1528–99); see DM VII.1.19, I.256–57. However, Suárez also indicates that Fonseca provides several “unsound” examples of modes, which seems to indicate that Fonseca’s conception differs from Suárez’s. For a similar point, see Menn (1997: 246).
there is a real distinction between the two, for this fact is consistent
with the claim that the limit is a *mode* of that part. Indeed, in the course
of his discussion of the modal distinction, Suárez himself speaks at
times as if indivisible limits are modes. Thus, he notes that a portion
of water can be called complete when separated from other portions
of water but incomplete when continuous with them, in which cases
there is "a mode [that] consists solely in diverse union or termination"
(*modus solum consistit in diversa unione vel terminatione*). The portion
of water continuous with an adjacent portion shares a common uniting
or continuative mode with that other portion, whereas in separation,
that portion has its own terminating mode.

At this point there might seem to be an obvious problem for Suárez
with respect to the conception of a continuative mode: According to
his own view, the same mode cannot modify two really distinct enti-
ties. I have noted Suárez’s conclusion that a mode is in some way ident-
tical to the *res* it modifies insofar as the former is inseparable from
the latter. However, he takes this fact to show that modes of really distinct
substances must themselves be really distinct. Since he also holds
that two different parts of a continuum are really distinct from each
other, he cannot claim that the same mode modifies two parts. In
that case, the mode would be identical at the same time to part1 and to
the really distinct part2, and thus would be both identical to and really
distinct from itself. Indeed, Suárez indicates that a continuative limit
shared by two parts "cannot be really the same with both parts togeth-
er, when those very parts are really distinguished from each other".

Nonetheless, I think Suárez does have the resources to defend
the claim that continuative limits are modes. Important here is the
distinction I previously cited in Suárez between “complete” and “in-
complete” portions of water. He applies this distinction to “integral”
or “quantitative” parts, which are to be distinguished from “essential”
or “qualitative” parts, that is, substantial form and prime matter. With
respect to integral parts, Suárez says that

in a separated state they are distinguished as complete
beings, but when united they are distinguished as incom-
plete beings. Accordingly, when such parts are united,
they are sometimes said to be actually distinct as parts,
but potentially as beings, that is, as units of a sort, be-
cause they are in potency to become such units.

In terms of these remarks, one could say that indivisible limits can be
attributed only to complete beings. Thus, continuative limits modify
not the adjacent parts of a continuum, which are incomplete beings,
but only the whole those parts compose. Though a continuative limit
could not modify two parts in their separated state, it seems it could
modify them insofar as they are continuous. In schematic terms, this
mode can modify the continuous (part1 & part2), which conjunction
itself counts as a single “complete being”. In contrast, the terminative
limits that the parts have in their separated state can limit only one of
the parts, which equally count as complete beings.

Given this use of Suárez’s discussion in Disputatio VII, as well as
his own reference in this section to modes of union and termination,
it is somewhat disconcerting that nowhere in Disputatio XL does he
suggest that indivisible limits are modes of what they limit. Indeed,

34. DM VII.1.19, l.257.
35. DM VII.1.26, l.260.
36. DM VII.1.23, l.258.
37. DM XL.5.36, II.561. Suárez offers this point in defense of the claim that limits
are really distinct from the parts they limit; see note 41. However, for reasons
indicated presently, I do not think the consideration he offers precludes the view
that a continuative limit is a mode.
38. DM VII.1.23, l.258. Suárez’s position is that in contrast to integral parts, es-

tential parts can never be anything more than incomplete substances when
existing in separation.
39. I thank an anonymous reader for providing the schemata in this and the pre-

vious paragraphs.
40. This fact was first suggested to me by a note in Menn (1995), in which it is said
that “it would have been more consistent with [Suárez’s] general program” to
explicate surfaces “as modes of termination and union, as Descartes thinks
the Scholastics generally did and as many of them doubtless did” (195, n.20).
he says explicitly in the latter text that a real distinction holds in the case of indivisibles and what they limit. When he claims that indivisibilia are “constituents” of the continuum, therefore, he means to say that they are distinct res in the same way that the divisible parts composing that continuum are distinct res. But why think that the indivisibles have this status as opposed to the status of being a modus?

Suárez’s most explicit argument in Disputatio XL against the claim that an indivisible limit is only a modus ex natura rei distinctus emphasizes that such a limit has a property, namely, indivisibility, that the part it limits lacks. Thus, there is the absence of a kind of “proportion” required for the limit to be a mode that has a kind of identity with the reality of the part it limits. However, this argument seems to me far from compelling: The limits at least pertain to quantity in some way, and it might be thought that this suffices for the proportion on which Suárez is insisting. Moreover, I have noted that Suárez himself speaks explicitly of “modes of union and termination”, and it isn’t clear that these modes cannot be conceived to be indivisible in some respect. Indeed, we will discover that Descartes conceives of modes in just this way.

Finally, there appear to be good reasons for Suárez to say that the indivisible limits are modes rather than really distinct res. One is indicated by the passage from the Metaphysics I cited earlier, in which Aristotle puzzles over the fact that indivisibles can be instantaneously produced and destroyed, as opposed to being generated and corrupted, which are processes that occur over time. Similarly, in Disputatio XL Suárez notes as an objection to his account that “the material indivisibles that arise anew are created and consequently, when they are destroyed, annihilated.” Suárez grants that the union or separation of parts involves the creation or annihilation, rather than the generation or corruption, of indivisible limits. In fact, this admission allows him to address some concerns that Roderick Chisholm has raised concerning the status of boundaries. In particular, Chisholm asks:

If the continuous object is cut in half, then does the one boundary [that demarcates two adjacent parts] become two boundaries, one thing thus becomes two things?

... But how can one thing — even if it is only a boundary — become two things? And does this mean that when two things become continuous, then two things that had been diverse become identical with each other, two things thus becoming one thing?

Suárez suggests that when the continuous object is cut, it is not the case that one thing becomes two; rather, a continuous boundary is instantaneously annihilated and then immediately replaced by two newly created terminating boundaries. Likewise, when two things become continuous, it is not that two boundaries become identical; rather, two terminating boundaries are instantaneously annihilated and immediately replaced by a newly created continutive boundary. But as Suárez indicates, his own answers to these questions seem to

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41. DM XL.5.38, II.562. In par. 35–9 of this section (II.561–2), Suárez offers various arguments in favor of the conclusion that indivisibles “are really distinguished among themselves and from body” (inter se, et a corpore realiter distinguunt). However, several of these arguments show only that indivisibles are distinguished in reality from the bodies they limit, and not necessarily that they are really distinct (cf. note 29). For instance, the claim in par. 36 that a limit of one part of a line is really distinct from other parts of that line (II.561) is compatible with the claim that it is a mode of the part it limits. I have also considered how the argument in this paragraph — that the same continutive limit cannot be a mode of really distinct parts — could nonetheless be reconciled with the claim that this limit is a mode.

42. DM XL.5.55, II.567. Incidentally, this passage provides reason to reject the interpretation of Suárez in Varzi (2013), according to which the continutive boundary is really the two boundaries of the adjacent parts that “coincide spatially without overlapping mereologically”. If this were the case, it would seem that separation would not require the creation of new boundaries, contrary to what Suárez himself indicates in the passage.

require that he explain natural changes in terms of decidedly non-natural instances of the creation and annihilation of res.\textsuperscript{44}

Though he admits the production of indivisibilia is "difficult to explain", Suárez nonetheless proposes that a natural explanation can be provided in terms of the causal notion of natural resulting.\textsuperscript{45} Thus, one can explain instantaneous creation in terms of such a resulting that derives from the natures of the parts in separation (in the case of the terminating boundaries) or in continuous union (in the case of the continuative boundaries). As Suárez recognizes, there is the immediate objection that since "matter is not active", boundaries cannot derive from material parts "as from an active principle" (\textit{ut a principio activo}).\textsuperscript{46} However, Suárez responds that "matter has some activity through resulting", citing the theological example of the withdrawal of the Word from the human body of Christ. In this case, "from the matter itself results partial subsistence through some intrinsic activity and reception of its own subsistence".\textsuperscript{47} The only candidate for the source of this sort of resulting is the body itself, which serves as an internal cause of the subsistence.

The difficulty with this response, however, is that Suárez himself takes subsistence to be a \textit{modus} rather than a res.\textsuperscript{48} His theological example therefore shows at most that matter can be an active source of the \textit{modes} that naturally result from it. There is still a question whether any new res can naturally result from matter. A positive answer to this question seems to be in some tension with Suárez's argument that the accident of quantity cannot be the source of any new quantitative res since it imitates the nature of matter, which "is to receive and not to act".\textsuperscript{49} But if a quantitative part cannot produce another quantitative part really distinct from itself, why think that it or any other material part can produce some indivisible limit really distinct from itself? Suárez's theological example provides no precedent for saying that it can.\textsuperscript{50}

What the example allows, however, is that matter is responsible for changes in its modifications that occur when its parts join or separate. That is, when the parts join, a new continuative boundary naturally results from matter, which boundary can be understood to be a modification of the continuous object these parts compose. And when the parts separate, two new terminating boundaries that modify the separated parts naturally result from the matter of those parts. There is no need to appeal in these cases to the production by mere matter of a new res.\textsuperscript{51}

It is clear enough from Suárez’s discussion of indivisibilia in Disputatio XL that he did not take this route. However, I hope to have shown that he had some reason to attempt to conceive the indivisibles in terms of his new model distinction. But even though Suárez himself

\textsuperscript{44} DM XL.5.55, II.566.

\textsuperscript{45} DM XL.5.56, II.567. In Suárez's view, a "natural resulting" (\textit{naturalis resultantia}) or "natural emanation" (\textit{naturalis dimensione}) is a kind of efficient causality distinct from the production of some res by means of an action. Whereas the latter is an "extrinsic" (\textit{extrinsica}) action that presupposes that the agent "has already been constituted in its complete and natural state", the former is "wholly intrinsic [omminio intrinsica] and in a certain sense has to do with the completed production of a thing, since it tends toward constituting the thing in the connatural state that is \textit{per se} owed to it by the power of its generation" (DM XVIII.3.14, II.659). According to Suárez, however, in both cases of causation, the effect must be distinct in reality from its cause.

\textsuperscript{46} DM XL.5.57, II.567.

\textsuperscript{47} DM XL.5.57, II.567. With the withdrawal of the Word, the human body of Christ could have only a created subsistence, as opposed to the uncreated subsistence it has in virtue of its union with the Second Person of the Trinity.

\textsuperscript{48} Suárez offers subsistence as an example of a mode in DM VII.1.18, I.256; cf. his discussion of subsistence in DM XXXIV.2.20, II.359.

\textsuperscript{49} DM XVIII.4.3, I.624.

\textsuperscript{50} Suárez also offers as an option that indivisibilia derive from "that action by which God conserves matter, being as if some concreation [esse veluti quasdam concreationem](ex vi et debito praexistentis actionis) (DM XL.5.57, I.567). This leads us back to the question of whether passive matter and quantity can act in the required manner.

\textsuperscript{51} In fact, Suárez says that shape and location (\textit{ubi}), which are quantitative modes, naturally result from the accident of quantity; see DM XVIII.3.3, I.615b–16a. To my knowledge, it is only in the case of indivisibilia that Suárez allows that new res can result from passive matter or quantity.
never attempted this sort of reconceptualization, the remarks on the
Eucharist from Descartes cited above reveal that the latter did make such an attempt. At this point we are in a position to turn to Descartes’
own explicitly modal realism concerning surfaces.

III. Descartes’ Modal Realism
I have highlighted Descartes’ claim to Arnauld, in Replies to Objections
IV, that an explanation of the Eucharist can substitute surfaces distinct
from bodily parts for the persisting species invoked by the Council
of Trent. However, this response was not immediately satisfactory to
other critics. In particular, the authors of Objections VI pressed Des-
cartes to explain “how it can be said that [a surface] is neither a part of
the bodies that are perceived by the senses, nor a part of the air and
its vapors”.52 This prompted Descartes to note that a surface is “only a
mode and not a part of a body” (tantum modus non ... pars corporis), and
moreover that it is an “extremity” (extremum) that is the same mode in
both the contained and the containing body. What allows for the iden-
tification of the extremity with the Eucharistic species is the fact that it
“can remain even though the bodies are removed, providing only that
the other bodies of exactly the same size and shape succeed them in
those places”.53 Descartes is a modal realist about the Eucharistic sur-
faces insofar as he holds that they are themselves modes rather than
substantial parts. However, he takes these modes to be special insofar
as they not only are shared by different bodies, but also can survive
the replacement of those bodies.

Descartes’ most mature understanding of this version of modal re-
alism is informed by the theory of distinctions he offers in his Pri-
ciples of Philosophy (1644). In this text, he posits three basic distinctions.
The first is a “real distinction” (distinctio realis), which “exists only be-
tween two or more substances”.54 The second is a “modal distinction”
(distinctio modalis), which holds either between a mode and the sub-
stance it modifies, or between two different modes of the same sub-
stance.55 The third is a “distinction of reason” (distinctio rationis), which
holds either between a substance and one of its attributes, or between
two different attributes of the same substance.56 Attributes are distin-
guished from modes insofar as the modes of a substance can change
while this substance persists, whereas the attributes must exist just as
long as the substance to which they are attributed.57 To say that sur-
faces are modes, then, is to say that they are variable features that are
modally distinct from the bodily substances they limit.

This set of metaphysical distinctions is not an exact match with
what we find in Descartes’ earlier writings. In fact, at the time of the
Meditations (1641) Descartes appropriated the Scotistic notion of a
formal distinction. In the Objections I to the Meditations, the Dutch
priest Johannes Caterus appeals to this notion in responding to the
argument in Descartes that the fact that mind and body can exist in
separation follows simply from the fact that they can be conceived
separately. Caterus notes that according to Scotus, two items, such as
God’s justice and mercy, can be formally distinct without it being the
case that they can exist separately.58 In response, Descartes observes
that Caterus’ formal distinction does not differ from a “modal distinc-
tion”, which both apply merely to “incomplete beings”, as when one
considers motion in abstraction from body. He claims that this distinc-
tion therefore does not apply to the case of mind and body, since in
this case we are considering two “complete beings”.59

Descartes fails to consider here whether the incompleteness of mo-
tion is of the same kind as the incompleteness of divine justice. He
admits this oversight in the Principles, when he notes at the end of
58. O I, AT VII.100.
59. RO I, AT VII.120–1. Here, Descartes is running together distinctions that Sco-
tus himself separated; see the remarks above at note 30.

52. O VI, AT VII.417.
53. RO VI, AT VII.433.
54. PP I.60, AT VIII.A.28.
the article on the distinction of reason that in his earlier response to Caterus, “I did lump this type of distinction [of reason] with the modal distinction”, though he adds this was simply because that response “was not a suitable place for making a careful distinction between the two types; it was enough for my purpose to distinguish both from the real distinction”.\textsuperscript{60} Descartes suggests here that when responding to Caterus, he of course recognized that what he called a formal distinction in fact includes two different kinds of non-real distinctions, namely modal and rational, but that he had no reason in the context of his response to distinguish these two.

To my mind, however, the response to Caterus indicates a real confusion on Descartes’ part concerning the nature of the distinctions that fall short of a real distinction.\textsuperscript{61} In fact, it seems likely to me that Caterus’ remarks made clear to Descartes the need to rethink his theory of distinctions, the result being a different version of this theory in the Principia that just so happens to correspond to the tripartite distinction we find in Suárez. It is also significant that Descartes refers to a passage from Suárez’s Disputationes in his reply to Arnauld’s objections to the Meditations, which he wrote after his response to Caterus.\textsuperscript{62} There is some reason to think it was his reading of Suárez that led Descartes to the revised theory of distinctions he provides in the Principia.\textsuperscript{63}

60. PP I.62, AT VIII.A.30.

61. In particular, Descartes fails to recognize in his response to Caterus that a modal distinction involves a distinction in reality, and not one created merely by abstraction through inadequate concepts. See Wells’ related conclusion that in this response, “Descartes has mixed and confused instances of a proper modal distinction — shape and motion — with instances of improper modes or modi cogitandi — justice and mercy in God” (1965: 19).

62. RO IV, AT VII.235. The reference here — in fact, the first reference to Suárez in Descartes’ extant writings — is to the discussion of ‘material falsity’ in DM XXX.1.9–12, II.63–5, hardly a section one could find in the course of a superficial review.

63. On Descartes’ debt to Suárez’s theory of distinctions, see Glauser (2002). See also the discussions of the influence of this theory on Descartes in Rozemond (1998: ch. 1), and Ariew (2014: 41–6).

64. Even more narrowly, Descartes restricts the real distinction to created substances, as things that can exist in separation. I take the suggestion in both Meditation VI and the Principles to be that separability by divine power is a necessary condition for a real distinction; cf. AT VII.73 and PP I.60, AT VII.A.29. As indicated in note 27, however, Suárez denies that separability is necessary for a real distinction, and thus allows that God and creatures can be really distinct even though they are not mutually separable. For the suggestion that Descartes could perhaps follow Suárez in thinking that mutual separability is merely sufficient for a real distinction, see Rozemond (2011: 256–7).

65. In arguing against the nominalist position that there is only a distinction of reason between quantity and the quantified substance, for instance, Suárez emphasizes the importance of distinguishing between the extension of the parts of this substance and the exclusive occupation of places that derives from the impenetrability that quantity alone can contribute; see DM XL.2, II.533–8. Yet his conclusion there is that though his alternative to the nominalist account of quantity “cannot be sufficiently demonstrated by natural reason, still its truth is shown convincingly from theological principles, and especially on account of the mystery of the Eucharist” (DM XL.2.8, II.534).
separately in this way is a substance, not an accident”.66 He adds that it does not matter that the accident can exist separately only miraculously since “to occur naturally is nothing other than to occur through the ordinary power of God, which in no way differs from his extraordinary power”.67 Yet this consideration would not have been compelling to Suárez, who took the fact that God can miraculously conserve a real accident without its inhering in a subject to show only that the accident is a res distinct from that subject, and not that it is a substance. For even in its separated state, the accident preserves an intrinsic “aptitude” (aptitudinalis) to inhere in a subject, something no substance possesses.68 In this dispute, it seems the best option for Descartes at this point is to return to the argument with which we started, namely that his account of surfaces reveals there is no need to appeal to real accidents to explain the persistence of the “species” of the elements in the Eucharist.

These differences with respect to the real distinction are obviously important, but Descartes’ account of the modal distinction nonetheless provides particularly strong support for the proposal that Suárez is a crucial source for his mature theory of distinctions. Descartes in fact follows Suárez in distinguishing two kinds of modal distinction, the first between a mode and what it modifies, and the second between two different modes of the same subject.69 As Suárez notes, it may seem problematic to connect these two since there is only non-mutual separability of subject from mode in the case of the first distinction, but mutual separability of the modes in the case of the second. However, Suárez’s way around this problem is to emphasize that the mutual separability of the modes differs from the sort of mutual separability involved in a real distinction insofar as the modes have a kind of identity with each other through their identity with the same subject.70 Descartes follows a similar line in insisting that even though we can conceive of the modes apart from each other, nonetheless we cannot conceive of the modes “apart from the substance in which they inhere”.71 As I have indicated, Suárez distinguished the relation of two modes of the same subject from the relation of modes of different subjects, arguing that in the latter, “the distinction between the modes is real, not of course by reason of the modes themselves, but by reason of the things in which they exist”.72 We find the same distinguishing of cases in Descartes, and for virtually the same reason. Thus, he claims that when the modes we compare are in distinct substances, “it seems more appropriate to call this kind of distinction a real distinction, rather than a modal distinction, since the modes in question cannot be understood apart from the really distinct substances of which they are modes”.73 The parallels here are striking, even more so given the fact that Descartes could not have found this sort of account of the two modal distinctions in other Jesuit textbooks he recalls having read as a student at La Flèche.74

But even if his understanding of the modal distinction is largely derived from Suárez, Descartes’ application of this distinction to the case of surfaces most assuredly is not. In his Replies to Objections VI, Descartes observes that “all mathematicians and philosophers” have held that surfaces are features distinct from body that lack depth. However, he notes two different ways in which surfaces are considered to lack

66. RO VI, AT VII.434.
67. AT VII.434–5.
68. DM XXXVII.2.9, II.495.
70. DM VII.1.26, I.260.
71. PP I.61, AT VIII.29.
72. DM VII.1.26, I.260.
73. PP I.61, AT VIII.30. Of course, there remains the difference that Descartes requires that the subject of modes be a substance, whereas Suárez requires that it be a res, which could be a substance or a real accident.
74. In a letter to Mersenne, Descartes recalls having read the Jesuit commentaries on Aristotle by Toletus and Rubius, Coimbrans (Sept. 30, 1640, AT III.185). But as Menn indicates, the primary member of the Coimbrans, Fonseca, offered a version of Scotus’ theory of distinctions (1997: 242–50). Toletus and Rubius seem closer to a Thomistic position, which has no room for an intermediate distinction.
depth. Whereas some hold that surfaces derive from a consideration of a body in abstraction from its depth without committing themselves to the view that there is something in nature that lacks depth, others hold that surfaces are modal features of bodies that in fact lack depth.\footnote{75} It is clear that the former are concerned to allow for the nominalist position that surfaces and other indivisibles do not exist as real features of reality over and above bodies and their three-dimensional parts. Descartes’ suggestion is that the main realist alternative involves the identification of the surface with a two-dimensional bodily mode. However, we know by now this is not the view of Suárez, who identified surfaces rather with res-like entities that, like parts, are bodily constituents but that, unlike parts, do not compose bodies.

I have argued that Suárez would in fact have been well advised to accept something like Descartes’ modal account of surfaces. As far as I can determine though, there is no clear scholastic precedent for this account. Certainly one cannot find such an account in Suárez’s discussion of indivisibilia. And in any case, there is no evidence Descartes even encountered the treatment of surfaces in the Disputationes or, if he did, that he comprehended its distinctive features.\footnote{76} This leads me to suspect that Descartes derived his modal account of surfaces by applying his notion of a mode to the common Aristotelian view of surfaces as two-dimensional boundaries of continuous parts.

Perhaps the primary reason Descartes is so concerned to deny that the Eucharistic surfaces are parts is that he takes any parts that compose an extended substance to be themselves really distinct extended substances. Indeed, in the Principles, he offers as an example of a real distinction the fact that every part of an extended substance “is really distinct from the other parts of the same substance”, where for Descartes, of course, a real distinction is one between distinct substances.\footnote{77} If the Eucharistic surfaces were parts, Descartes would be committed to the conclusion that something of the substance of the bread and wine remains after consecration, contrary to the Catholic teaching that only the substance of Christ’s body and blood is present then.\footnote{78} Yet if the surfaces are merely modes, as Descartes repeatedly insists they are, there is no conflict on this point.

At the beginning of this section, I quoted a passage from Replies to Objections VI that indicates—in line with Descartes’ position in Replies to Objections IV—that there are two important features of the surfaces of the Eucharistic elements beyond the fact that they are modes rather than substantial parts. The first is that surfaces are common to the Eucharistic elements and the air that surrounds them, and the second is that these surfaces continue to exist even when the substances of the bread and wine are replaced by the substance of Christ’s body and blood.\footnote{79} The first feature of surfaces is related to Aristotle’s view that two things are continuous when their “extremities are one”. But Descartes’ suggestion that surfaces are modes common to different bodies would appear to be problematic insofar as it requires “straddling modes” that simultaneously modify distinct substances.\footnote{80}

We have seen that it would be impossible for Suárez to hold that a mode of one res could also be a mode of a really distinct res given that it receives its identity from the res it modifies. Yet it seems a similar consideration blocks the admission of straddling modes in Descartes. Recall his conclusion in the Principles that the distinction of a mode conceives the two halves of a part of matter, however small they may be, as two complete substances’ (Jan. 19, 1642, AT III.477). I argue in Schmaltz 2018 that texts such as these provide support for a “pluralist” interpretation of Descartes’ view of extended substance, in opposition to a “monist” interpretation on which he holds that there is only one such substance.

75. RO VI, AT VII.433.
76. As indicated in note 62, the first reference we have in Descartes to Suárez is from the time of his composition of Replies to Objections IV, which also includes the appeal to surfaces in the explanation of the Eucharist.
77. PP I.60, AT VIII.A.28. See also Descartes’ claim in a letter to Gibieuf that “I conceive the two halves of a part of matter, however small they may be, as two complete substances” (Jan. 19, 1642, AT III.477). I argue in Schmaltz 2018 that texts such as these provide support for a “pluralist” interpretation of Descartes’ view of extended substance, in opposition to a “monist” interpretation on which he holds that there is only one such substance.
78. Of course, since Suárez holds that there are res that are not substances, he is not committed to this result.
80. I borrow the term “straddling mode” from Hoffman (2009: 108), who defines it as “a mode (token) [that] can simultaneously be a mode of two substances”. Contrary to what I argue here, Hoffman thinks there is room in Descartes’ system for straddling modes so understood.
of one substance from a mode of a different substance must be real rather than modal.\textsuperscript{81} Thus, a straddling mode would have to be at the same time identical to and really distinct from itself, not exactly a comfortable consequence.

There is the solution I offered earlier on Suárez’s behalf, namely that the surface is a mode not of the adjacent parts taken separately, but rather of the whole composed of those parts. In this case, the mode could be identified with a single subject. Likewise, it might seem to be an option for Descartes to hold that the common surface is a mode only of the whole composed of the adjacent parts. Indeed, it might even be thought that Descartes himself suggests such a view when he insists that there is just one mode in this case, as opposed, for instance, to two different spatially coincident modes of the parts.\textsuperscript{82}

Admittedly, it is not clear that the view that the Eucharistic elements share a common surface is something to which Descartes is entitled.\textsuperscript{83} From an Aristotelian perspective, there can be such a surface only if the parts sharing it are truly continuous, and there can be such continuity only if those parts are completely homogeneous. To be sure, Descartes does hold that the Eucharistic elements and surrounding air are homogeneous in the sense that they are all composed of the same matter, which he takes to consist in “continuous quantity”.\textsuperscript{84} Nonetheless, it seems he must allow for a certain kind of heterogeneity given the implication of his physics that the Eucharistic elements and surrounding air are composed of different “elements”. On the version of matter theory he offers in the \textit{Principles}, there are three basic elements distinguished by their different propensities for motion. In addition to fire, which we can set aside at this point, Descartes posits air and earth. Air is distinguished by the fact that it “is composed of matter divided into spherical particles that are still very minute when compared with those we can see with our eyes, but that have a definite fixed quantity and can be divided into much smaller particles”. In contrast, earth “consists of particles that are much bulkier or have shapes less suited for motion”.\textsuperscript{85} So the earthy element composing the Eucharistic bread and wine and the airy element composing the surrounding atmosphere have different kinds of particles capable of different kinds of motions. We would seem to have here not true Aristotelian continuity, but rather a contiguity that involves parts with their own distinguishable boundaries. Yet with mere contiguity, we cannot have two-dimensional boundaries that are shared, that is, we cannot have surfaces in Descartes’ sense. Indeed, it seems we could have such surfaces only in the case Descartes mentions toward the end of his life in correspondence, namely the one in which we “conceive a continuous body of indeterminate magnitude, or indefinite, in which nothing beyond extension is considered”.\textsuperscript{86}

Even if we waive this difficulty, and thus grant Descartes his Eucharistic surfaces, there is still his claim that the very same surfaces can remain even after the substances they previously limited have been replaced by different substances. Descartes attempts to defend this claim in a 1645 letter to the Jesuit Denis Mesland, in which he notes that the surface common to the air and the Eucharistic bread “changes neither with the one nor with the other, but only with the shape of the dimensions that separate one from the other”. After consecration, when the body of Christ replaces the bread and new air takes the place of the old, the surface “remains the same in number [eadem numero] as it was when

\textsuperscript{81} PP I.61, AT VII.30.

\textsuperscript{82} The contrasting view is similar to the realist view indicated in Varzi (2013), according to which there are two boundaries of the adjacent parts that “coincide spatially without overlapping mereologically”. Varzi attributes such a realist view to Suárez, though for reasons indicated in note 42, such an attribution can be challenged.

\textsuperscript{83} Thanks to Shane Duarte for drawing my attention to this point.

\textsuperscript{84} As indicated by Descartes’ claim in Meditation V that he distinctly imagines body in terms of “quantity that the common philosophers call continuous” (\textit{quantitatem quam vulgaris Philosophi appellant continuum}) (AT VII.63). See also his view in the \textit{Principles} that “the earth and the heavens are composed of one and the same matter” (PP II.22, AT VIII.A.52).

\textsuperscript{85} PP III.52, AT VIII.A.105.

\textsuperscript{86} Descartes to More, Feb. 5, 1649, AT V.269. In this letter, Descartes contrasts this sort of conception of body with a conception of it as actually divided into parts.
between the other air and the bread, because its numerical identity does not depend on the identity of the bodies in which it exists, but only on the identity or resemblance [l’identité ou resemblance] of the dimensions." Since the surfaces are identified only with the dimensions of objects and not with the objects themselves, they can survive the replacement of certain objects with others that have similar dimensions. Though these dimensions must be modes of some body or other, Descartes’ claim here is that they are not tied to particular bodies.

The denial that surfaces are essentially dependent on particular bodies is not restricted to Descartes’ discussion of the Eucharist. It is important also for the general account of place he provides in the Principles. In this text, he distinguishes between internal and external place. In considering internal place, Descartes further distinguishes between the three-dimensional extension of the internal place insofar as it is related to space and that extension insofar as it is related to a particular body. When it is referred to space, we attribute to the extension only a generic unity [unitatem ... genericam], so that when a new body occupies that space, the extension of the space is reckoned not to change, but rather to remain one and the same, so long as it retains the same size and shape and keeps the same position relative to certain external bodies that we use to determine that space.88

Internal place considered as having a merely “generic unity” counts as a species of “extension considered in general” (extensio consideratur in genere),89 which in Descartes’ view is a mere “mode of thinking” (modus cogitandi) under which particular created things are conceived, and not something that exists external to mind.90 In contrast, when it is referred to body, internal place is “extension as something singular”, which we consider “as changing whenever there is a new body”.91 Thus, the motionless internal place several bodies can occupy is a mere abstraction, whereas the internal place that moves with the particular bodies with which it is identified is a concrete feature of reality.

Both kinds of internal place are contrasted with external place, defined as “the surface [superficie] immediately surrounding what is in the place”, which is “no more than a mode”. The basic difference here is that the external place is a two-dimensional boundary rather than a three-dimensional volume. However, external place is further distinguished from the internal place referred to a body insofar as it does not belong to a particular body, but “is always supposed to be the same, when it retains the same size and shape”.92

In terms of Descartes’ theory of distinctions, it might seem that the surface he posits in the case of the Eucharist is really distinct from particular bodies. Indeed, we have seen that Suárez himself affirmed this sort of distinction between limiting surfaces and the parts they limit. This view was open to him insofar as he identified the surface with a kind of res rather than with a mode. However, Descartes is clear that the surface is supposed to be only a mode. Yet since his own view requires that a mode cannot be conceived apart from the particular object it modifies, it appears Descartes simply cannot allow that a surface is really distinct from the particular body it limits.

It may be that Descartes could allow for some such distinction insofar as he conceives of surfaces as akin to internal place as referred to space, which is something different bodies can possess while retaining its identity. But this is possible for the internal place only because it is a mere abstraction that has simply a “generic unity”. Likewise, it seems the surface could have an identity detached from particular bodies only insofar as it is an abstraction and not a concrete mode inseparable from the particular subject it modifies. Here, it is significant that Descartes

87. Feb. 9, 1645, AT IV.164–5.
88. PP II.12, AT VIII.A.46.
89. PP II.12, AT VIII.A.46.
90. See PP I.58, AT VIII.A.27.
91. PP II.10, AT VIII.A.45
tells Mesland that the identity of surfaces depends only on the “identity or resemblance” of the relevant dimensions. The resemblance of the three-dimensional extension that different bodies occupy allows us to regard an abstracted internal place as the same, but it cannot allow us to hold that the very same concrete extension remains. Likewise, the resemblance of the two dimensions that come to limit different bodies allows us to regard a surface as the same, but it cannot allow us to conclude that the very same concrete mode is present. It may be that resemblance is all that is needed to “speak with the vulgar” in claiming that the Eucharistic surfaces persist after consecration. However, even on Descartes’ own terms, resemblance is insufficient for the identification of these persisting surfaces with concrete modes.93

It could perhaps be suggested on Descartes’ behalf that it suffices for practical purposes to be able to speak as if the same surfaces persist, just as it so suffices to be able to speak as if different bodies can occupy the same space. However, there is some question whether Descartes himself would be comfortable with saving the Eucharistic phenomena in this manner. An interesting point of comparison is with his attitude toward another theologally charged issue, namely the Copernican view that the earth moves around the sun. The 1633 condemnation of Galileo by the Roman curia for defending this view had prompted Descartes to suppress the publication of his Le Monde, which also suggests a Copernican cosmology.94 When Descartes, in his Principles of

93. Cf. the view in Lennon (2007) that Descartes’ account of Eucharistic surfaces suggests that a modal change is a change “solely in our conception of things” (34), and thus that “the tendency in Descartes … is to collapse the distinction between the rational and modal distinctions” (35, n.24). My own view is that though Descartes’ account of surface or external place seems to imply that this entity is only a “mode of thinking” and not a concrete mode, this is an implication he himself is committed to rejecting. For one thing, such an implication would undermine the reality of persisting Eucharistic species, which Descartes invoked surfaces to preserve in the first place.

94. Descartes notes in a letter to Mersenne that after his discovery of the condemnation of Galileo, “I did not want to publish a discourse in which a single word could be found that the Church would have disapproved of; so I preferred to suppress [Le Monde] rather than to publish it in a mutilated form” (Nov. 1633, AT I.27).

It is questionable that Descartes can consistently maintain that the earth is motionless in this sense. Particularly problematic here is his explanation of the tides in terms of the faster speed of the surrounding vortex, which seems to involve a separation of the entire contiguous celestial matter from the earth.95 Even so, the official line in Descartes is that the earth lacks motion strictly speaking, and not in some other diminished sense.

Admittedly, there is a complication indicated by the qualification that motion is transference from other immediately contiguous bodies considered as if at rest (tanquam quiescentia spectantur). In the Principles,
At this point, we have reached something of a roadblock in Descartes’ modal realism. The impasse derives from the fact that he is committed to an account of the ontological status of surfaces that simply does not allow for his claim that, strictly speaking, the very same surfaces persist in the Eucharist. But frustration at being stopped at this point should not prevent us from recognizing that this account takes us further than Suárez’s moderate realism did. In particular, it is Descartes rather than Suárez who conceived of surfaces as two-dimensional modes of three-dimensional objects.

In order to appreciate the significance of this result, consider the account of the development of the early modern metaphysics of the material world that we find in the Dictionnaire historique et critique of Pierre Bayle (1647–1706). In the famous entry on Spinoza from the second edition of this text (1702), Bayle offers a narrative concerning the emergence of the notion of a modification of substance, a notion he takes to reveal the incoherence of Spinoza’s result that bodies are modifications of a single indivisible extended substance. Bayle’s narrative starts with the purported view in Aristotle that accidents “are of such a nature that they are no part of their subject, that they cannot exist without it, and that the subject can lose them without prejudice to its existence.”

The next stage of the story, however, is the rejection of this Aristotelian conception of accidents that is due to “all the miserable disputes that have divided Christendom”, and in particular the disputes between Catholics and Protestants over the Eucharist. It is this topic that led Catholic scholastics to admit “a real distinction between a substance and its accidents, and a reciprocal separability between those species of beings, which would result in the fact that each of them could exist without the other”.

However, Bayle notes that some of the scholastics who allowed for certain accidents that are really distinct from the substances in which they inhere nonetheless also came to hold “that there were accidents whose distinction from...”

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98. PP III.28, AT VIII.A.90.
99. AT VIII.A.91.
100. PP II.30, AT VIII.A.56.
101. As indicated in PP III.28, AT VIII.A.90.
102. DHC, “Spinoza”, rem. DD, Bayle 1740: IV.269a. The 1740 edition, which is the fifth, has the same version of the entry on Spinoza as the one present in the second edition of 1702, the last to include additions and corrections from Bayle himself.
103. Bayle 1740: IV.269a. In fact, of course, we can find such a doctrine in medieval scholasticism and thus prior to the split that occurred in the Reformation.
their subject was not real, and which could not subsist outside of it.” The latter accidents they called *modes*, and it is this notion of mode that survived the rejection of scholasticism in the modern period. As Bayle tells us,

Descartes, Gassendi, and, in general, all those who have abandoned scholastic philosophy, have denied that an accident is separable from a subject in such a way that it could subsist after its separation, and have ascribed to all accidents the nature of those that are called modes, and have employed the term *mode*, *modality*, or *modification*, rather than that of *accident*.104

According to this narrative, then, modes arose in a later scholastic period as a subset of accidents distinguished by their inseparability from their subjects, but that replaced accidents in the post-scholastic modern era due to the rejection of the contrasting class of real accidents that are separable from their subjects.

We now are in a position to identify Suárez as the primary source of the new notion of mode to which Bayle’s narrative draws attention. Indeed, our discussion confirms the suggestion in Bayle of the dependence of Descartes on this scholastic notion insofar as it provides reason to think that Descartes borrowed his mature account of modes and the modal distinction from Suárez. But though this particular debt to Suárez has received scholarly attention,105 what is less well known is that Descartes offers a modal realist account of surfaces that serves to advance Suárez’s own project of integrating the category of mode, conceived in terms of a new modal distinction, into an account of the metaphysics of the material world. To be sure, the advance in Descartes is not completely stable; his modal realism in fact provided an inadequate basis for the use he wanted to make of surfaces in his account of the Eucharist.106 But it is only in light of a consideration of his Suárezian inheritance that we can fully appreciate this failure. In the end, therefore, it is Suárez who allows us to see both the strengths and weaknesses of Descartes’ stance on the metaphysics of surfaces.107

**Works Cited**


105. See, for instance, the literature cited in note 63.

106. Stephan Schmid has noted to me the irony that Suárez had reason to adopt Descartes’ conception of surfaces, and Descartes reason to adopt Suárez’s.

107. I presented a previous version of this paper at the University of Notre Dame; thanks for the helpful feedback I received there. Thanks also to Stephan Schmid and to two anonymous referees for Philosophers’ Imprint for detailed comments on earlier drafts of this paper that prompted substantial revisions.


