

DESCARTES
AND HIS
CONTEMPORARIES



MEDITATIONS, OBJECTIONS,
AND REPLIES

EDITED BY
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THE UNIVERSITY OF CHICAGO PRESS
CHICAGO AND LONDON

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The University of Chicago Press, Chicago 60637

The University of Chicago Press, Ltd., London

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Printed in the United States of America

04 03 02 01 00 99 98 97 96 95 5 4 3 2 1

ISBN (cloth): 0-226-02629-9

ISBN (paper): 0-226-02630-2

Library of Congress Cataloging-in-Publication Data

Descartes and his contemporaries : meditations, objections, and replies / edited by

Roger Ariew and Marjorie Grene.

p. cm.

Includes bibliographical references and index.

ISBN 0-226-02629-9. — ISBN 0-226-02630-2 (pbk.)

1. Descartes, René, 1596-1650—Influence. 2. Philosophy,

Modern—17th century. I. Ariew, Roger. II. Grene, Marjorie Glicksman, 1910-

B1875.D37 1995

194—dc20

95-6453

CIP

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minimum requirements of the American National Standard
for Information Sciences—Permanence of Paper for
Printed Library Materials, ANSI Z39.48-1984.

THE GREATEST STUMBLING BLOCK: DESCARTES' DENIAL OF REAL QUALITIES

After his philosophical objections to the *Meditations*, Arnauld also gives a series of theological objections. He wants Descartes to say that the method of doubt does not apply to faith or morals, and he wants him to correct the apparent Pelagianism of the Fourth Meditation; but Arnauld predicts that “the greatest stumbling block for the theologians” (AT 7:217) will arise from Descartes’ denial of sensible qualities. Descartes summarizes Arnauld’s objections: “He thinks that my opinions do not agree with the sacrament of the Eucharist, because (he says) we believe by faith that when, in the eucharistic bread, the substance of the bread has been removed, the accidents remain there by themselves; but he thinks that I do not admit real accidents, but only modes, which cannot be understood, and indeed cannot exist, without some substance in which they are present” (AT 7:248). From a twentieth-century perspective, this objection seems surprising. In the first place, although Arnauld flatly asserts that “Descartes thinks there are no sensible qualities” (AT 7:217), it is unclear where Arnauld is getting this: Descartes does not seem to say anything like it in the *Meditations*. But supposing Descartes did say this, it seems strange that the only objection to it comes from a technical point of theology: surely we all believe, independent of theology, that we live in a world of colored and hot or cold objects, and surely our ordinary beliefs should put up some protest before succumbing to Descartes’ arguments. But in fact nobody raises this kind of objection against Descartes: when Arnauld and Descartes and (later) the sixth Objectors (AT 7:417) debate the status of sensible qualities, the objections arise from Scholastic theology rather than from ordinary belief, and they are couched entirely in the language of substances and modes and real accidents.

Reading the texts of the debate, we may well feel that we no longer understand, as Arnauld and the sixth objectors did, what was at issue when Descartes denied the reality of sensible qualities. In this essay I want to elucidate what Descartes was denying, why Arnauld and the others were troubled by this denial, and why the Eucharist was at the center of

their objections. In the process, I want to bring out why this denial was essential to Descartes' philosophical and scientific project. I will not discuss Descartes' *answers* to the objections, thus not, in particular, his eucharistic theology (here I defer to Armogathe's *Theologia cartesiana*). I will be presenting a reading of Descartes, not of the objectors; but it will be a reading of Descartes very much from the perspective of the traditional philosophers and theologians of his own time, and I hope it will explain some of their responses.

To understand what Descartes was saying and what Arnauld was reacting to, we must first recognize and reject the implicit assumption of most twentieth-century interpretations of Descartes: that when Descartes said that heat is not a real quality in fire, he meant that fire is not really hot. We can see that this assumption must be wrong from what Descartes says about figures. Descartes believes that bodies really have certain figures and that any scientific account of bodies will refer to these figures. He also believes that figures are qualities; but he denies that figures are *real* qualities, and he thinks that, in this denial, he is merely following a philosophical consensus. In a letter to Mersenne on projectile motion, Descartes starts by laying down some principles of his physics: in particular, he says that he "does not admit any real qualities" and that for this reason he does not "attribute any more reality to motion, or to all these other variations of substance that are called 'qualities,' than the philosophers [i.e., the Scholastics] commonly attribute to figure, which they call not a *qualitas realis* but only a *modus*." (AT 3:648–49; Descartes cites the Scholastic terms in Latin, in a French context). So for the Scholastics (as Descartes interprets them) some qualities are real qualities, and other qualities are only modes; figure is a quality (indeed, it is one of the four main species of quality that Aristotle recognizes in the *Categories*), but it fails to count as a real quality because it is only a mode. Descartes' interpretation of the Scholastics is in fact correct, at least for Suárez, who says that while some categories contain only *res* and some contain only modes, some contain both *res* and modes, "as in the genus of quality there are both heat and figure," heat being a *res* and figure a mode.¹ But the crucial point here is to note Descartes' attitude toward this Scholastic

1. Suárez, *Disputationes metaphysicae*, disp. 39, sec. 2, par. 17. (All references to Suárez in this essay are to the *Disputationes metaphysicae*.) Suárez notes that Aristotle listed figure last among the four species of quality (in *Categories* c.8) because it is "the lowest of them all, both in perfection and in way of being" (disp. 42, sec. 5, par. 9). That figure is merely a mode (but still truly a quality) is mentioned in Disputation 32 (sec. 1, pars. 14 and 19), Disputation 16 (sec. 1, par. 21), and elsewhere (in Disputation 42 [sec. 4, par. 15] figure is

position: he thinks the Scholastics are right about figures but wrong in regarding some other qualities as real, when in fact no other qualities have any more reality than figures do. In this letter, Descartes is concerned chiefly with motion—"motion [is] not a real quality, but only a mode" (AT 3:650)—but he wants his point to apply to *all* qualities, including sensible qualities: "[H]eat and sounds, or other such qualities, give me no difficulty, for these are only motions that are produced in the air" (AT 3: 649–50). So Descartes is not holding up figure and motion as examples of real qualities and arguing that sensible qualities have less reality; on the contrary, he is taking figure as an example of a quality that is *not* real and arguing that motion and sensible qualities are not (as the Scholastics believe) more real than this.²

This and similar texts show that for Descartes, as for Suárez, a quality can really belong to something, and be really a quality, without being a real quality: Descartes is using *real* consciously and precisely as a technical term. A real quality is a quality that is a *res*; something can fail to be a *res*, even though it is the subject of true predication, if it is a mode or an *ens rationis cum fundamento in re*.³ When Descartes speaks of something's degree of "reality," he means the degree to which it is a *res*: "I

defined as "a mode resulting in a body from the termination of a magnitude"), but never defended at length. The division of qualities, with figure as the fourth species, was universal enough that it is recorded even in the *Port-Royal Logic* (Arnauld 1775–83, 41:137). Contrary to what Descartes seems to suggest, however, Suárez' thesis that figures are modes rather than *res* was not the most common Scholastic view (Suárez criticizes Pedro da Fonseca for taking a different position in Disputation 7 [sec. 1, par. 19]). In this essay I will present Scholastic positions from the point of view of the specifically Suárezian modification of Thomism; this almost always corresponds to Descartes' understanding of Scholasticism. In my essay "Suárez, Nominalism, and Modes" (Menn forthcoming) I give a much more thorough treatment of Suárez' position on the issues here discussed, putting him in the context of Spanish Golden Age Scholasticism and indicating his differences from other Scholastics on some of these issues.

2. On motion, compare *Le monde*: "[T]hey [the Scholastics] attribute to [even] the least of these motions a being much truer and more solid than they attribute to rest, which they say is merely the privation of motion. But as for me, I think that rest is just as much a quality that must be attributed to matter when it remains in one place, as motion is a quality that is attributed to it when it changes places" (AT 11:40). Although the Scholastics may have been unjust in considering rest as a mere privation (rather than a mode), Descartes' main point is to reduce motion to the level of rest, rather than to exalt rest to the level of motion. Thus in the *Principles of Philosophy* he argues that motion "is merely a mode [of the moved body], and is not some subsisting *res*, just as figure is a mode of the figured thing, and rest of the resting thing" (*Principles* 2.25).

3. In *Le monde*, in a context closely parallel to the text just discussed, Descartes writes that motion "follows the same laws of nature as generally do all dispositions and all qualities that are found in matter, those which the learned call *modi et entia rationis cum funda-*

have explained sufficiently how reality receives more and less, namely, that a substance is more a *res* than a mode is; if there are any real qualities or incomplete substances, they are more *res* than modes are, but less than complete substances; finally, if there is an infinite and independent substance, it is more a *res* than a finite and dependent one" (AT 7:185). A real quality (or a real accident in any category) would be a *res* really distinguished from its subject, that is, distinguished from it as one *res* from another *res*. Since (for Descartes, as for the Scholastics) any *res* other than God must be something created by God, and since God is free to create any one *res* without creating any other *res*, it follows that any real accident could exist separately from its subject (and from any other subject).⁴ It is in this sense that Descartes denies the reality of qualities and other accidents: "I do not suppose any real qualities in nature, which would be added to substances (like little souls to their bodies), and could be separated from them by divine power" (AT 3:648).

Since *real quality* has this precise technical sense, Descartes' denial that colors, heat, or figures are real qualities does not commit him to denying that these are really qualities or that they really belong to things. In fact,

mento in re (modes and beings of reason with foundation in the thing) as well as *qualitates reales* (their real qualities), in which I naively admit that I find no more reality than in the others" (AT 11:40; here Descartes first cites the Scholastic terms in Latin, and then translates them into French). So Descartes recognizes that the Scholastics distinguish three ontological levels at which a quality might be located: real qualities are realer than modes, which are realer than *entia rationis cum fundamento in re*, and even these are not nothing *simpliciter*, but have some diminished kind of existence. Descartes' rhetoric is slightly overdone: he wants merely to reduce the alleged real qualities to the level of modes, not to reduce all these items to the level of *entia rationis*. An *ens rationis* is either a negation (or privation) or a *relatio rationis*, unless it is a mere figment with no *fundamentum in re*. Strictly speaking, although modes can properly belong to the category of quality (and to some other categories), no mere *ens rationis* can be truly a quality, or belong to any other category of being, although blindness can improperly or "reductively" be assigned to the category of quality.

4. It is a maxim of post-1277 Scholasticism (resisted only by some hard-line Thomists) that God's omnipotence entails that he can create any *res* without any other *res*, even if in the ordinary course of nature the first *res* is causally dependent on the second, as an accident is on its substantial subject. Accidents do in fact subsist by themselves in the eucharistic species. Suárez makes it necessary and sufficient for a real distinction (that is, of a distinction of one *res* from another *res*; a distinction might be *ex natura rei* without being in this sense *real*) that the two terms can be separated either naturally or supernaturally (disp. 7, sec. 2, pars. 9–12, 22–27). Descartes accepts the same criterion (*Principles* 1.60), with the same foundation in God's omnipotence. A real accident would be a *res* really distinct from its subject; when "we" followed the Scholastic view, we believed in "various qualities of bodies, as weight, heat, and others, which we imagined to be *real*, that is, to have an existence distinct from that of the body, and in consequence to be substances, even though we named them 'qualities'" (AT 3:667).

Descartes admits all of these as qualities of bodies: he says that the modes of a substance can equally be called its qualities (*Principles I*, 56),⁵ and these include “heat and other sensible qualities” (*Principles IV*, 198). Descartes is equally liberal about forms, denying *substantial* forms (except the human mind) but accepting many other forms: *Principles II*, 23 says that “all variation in matter, or all diversity of its forms, depends on motion,” *Principles IV*, 198 mentions the “form of fire,” and *Le monde* not only speaks of the “forms” of the three elements but also criticizes the Scholastics for positing a prime matter “despoiled of all its forms and qualities” (AT 11:33).⁶ There is no contradiction in any of this: just as a

5. “When we consider that a substance is affected or varied by them, we call them modes; when we consider that from this variation it can be denominated such-like [*talem . . . denominari*], we call them qualities” (*Principles I*, 56). This is a reference to the standard description of quality as *qua quales quidam dicuntur* (Suárez, disp. 42, sec. 1, par. 1, from the beginning of Aristotle’s *Categories* c.8); this is neutral as to whether the qualities are *res* or not. A horse’s whiteness *denominates* it “white” (rather than simply *nominating* or naming it), because the horse is named by the *denominative* term *white*, that is, not “whiteness” itself but a term grammatically related to it.

6. Descartes describes the forms of fire, air, and earth in *Le monde* (AT 11:26–29). Descartes thinks that “forms, at least the more perfect ones, are collections of many qualities, which have the power of mutually preserving each other” (AT 3:461); explaining the forms of the elements in *Le monde*, he says that “the forms of mixed bodies always contain in themselves some qualities that are contrary and harm each other, or at least do not tend to each other’s preservation; whereas the forms of the elements must be simple, and not have any qualities that do not fit together so perfectly that each tends to the conservation of all the others” (AT 11:26). Answering the question of why he does not explain the elements using “the qualities called heat, cold, wetness, and dryness, as the philosophers do,” Descartes says that “these qualities themselves seem to me to need explanation; and, if I am not deceived, not only these four qualities but all the others, and even all the forms of inanimate bodies, can be explained without needing to suppose for this purpose any other thing in their matter but the movement, size, figure, and arrangement of its parts” (AT 11:25–26). There is no question of *denying* these forms and qualities, only of *explaining* them (in such a way that they are not *res* or substances): Descartes has given a positive account of the “quality” that under different circumstances is called “heat” and “light” (AT 11:9). “Heat and other sensible qualities, insofar as they are in the objects, and also the forms of purely material things, as, e.g., the form of fire, arise from the local motion of certain bodies, and then themselves effect other local motions in other bodies.” From this Descartes infers that these forms and qualities themselves consist in the size, shape, and local motion of the parts of the bodies: “[W]e have never noticed that what in external objects we indicate by the names of light, color, odor, flavor, sound, heat, cold, and other tactile qualities are anything other than the different dispositions [consisting in size, shape, and motion] of these objects that bring it about that they move our nerves in different ways” (*Principles IV*, 198). There is nothing anywhere in Descartes to suggest that he thinks that bodies are not really colored or hot and cold: “When we see some body, we have no more certainty that it exists insofar as it appears figured, than insofar as it appears colored; but we recognize much more evidently what *being figured* is in it than what *being colored* is” (*Principles I*, 69).

real quality is a quality that is a *res*, so a substantial form is a form that is a substance. Qualities too are forms, although “accidental forms,” and a philosopher who thinks that all forms are accidents will reject substantial forms while continuing to believe in forms.⁷ This was a common stance in the seventeenth century: Robert Boyle’s *Origin of Forms and Qualities* rejects substantial forms and real qualities, and the Port-Royal Logic, which calls for eliminating “a certain bizarre kind of substances called in the School ‘substantial forms,’” complains of Aristotle’s *Physics* not that it is false, but that it is trivially true:

For who can doubt that all things are composed of a certain matter and of a certain form of this matter? Who can doubt that, for this matter to acquire a new mode and a new form, it must not have had this beforehand, that is, that it must have had its privation? Finally, who can doubt these other metaphysical principles, that everything depends on the form, that matter by itself does nothing, that place, motion, qualities, and powers exist? But after we have learned all this, it doesn’t seem that we have learned anything new, or that we are any better able to give an account of any of the effects of nature.⁸

7. Contra Gilson (1984, 162–63), Descartes is correctly following Scholastic usage in saying that a substantial form is a form that is a substance, while an accidental form is an accident (see, e.g., Suárez, disp. 15, sec. 1, pars. 5–6). Descartes makes his meaning clear in writing to Regius: “Lest there be any ambiguity in the word, let it be noted here that by the name ‘substantial form,’ when we deny it, is understood a certain substance adjoined to matter, and composing with the matter a merely corporeal whole, which [form], not less but even more than the matter, is a true substance, or *res* subsisting by itself, since indeed [the form] is said to be act, and [the matter] only potency” (AT 3:502). Descartes shows he knows that the Scholastics also recognized nonsubstantial forms when he says further that “all of the reasons [presented by Voetius] for proving substantial forms can be applied to the form of a clock, which no one will say is substantial” (AT 3:505; cf. 2:367). It misses the point to say that Descartes, in rejecting substantial forms and real qualities, is accepting qualities and forms but “not in the Scholastic sense”; he is making a precise anti-Scholastic statement within the Scholastic vocabulary, without twisting or deconstructing that vocabulary. Most discussions of Descartes’ “rejection of hylomorphism” are impeded by a tendency to take “substantial” form and “real” quality and “prime” matter as pleonastic expressions for the Scholastic conceptions of form, quality, and matter. Even to speak of a “rejection of hylomorphism” is dubious: on their own self-understanding, seventeenth-century philosophers did not reject conceptual schemes (or whatever hylomorphism is); rather, they rejected principles, where principles are *things* (substantial forms, real qualities, formless matter). Better yet, they did not so much reject these principles as *abstain* from them as unclear and unnecessary.

8. Arnauld 1775–83, 41:122. Arnauld endorses forms, saying that “the form is what renders a thing thus-and-such, and distinguishes it from others, whether it is a being really distinguished from the matter, according to the opinion of the School, or whether it is only the arrangement of the parts; it is by the knowledge of this form that one must explain its

The question whether any forms are substantial is connected with the question whether any forms are real. For the Scholastics, some forms are substances, and some are accidents; some of these accidents are real, and some are merely modes, but every substance is a *res*. But Descartes maintains, against the Scholastics, that every *res* is a substance and therefore that all accidents are merely modal⁹—except inasmuch as a substance can be an accident of another substance, as a piece of clothing (which is a substance) belongs to a person as an accident in the category of habit.¹⁰ Descartes' reasoning is simple: “[I]t is altogether contradictory for there

properties” (309); a few pages later he gives an all-out denunciation of “a certain bizarre kind of substances called in the School ‘substantial forms’” (312), than which “nothing is less well founded” (313). Similarly, Boyle accepts forms (1991, 40, 52, 53–54, 62, 69, etc.), and qualities including sensible qualities (13–15, 28–37, etc.), all the while polemicizing against the doctrine of *substantial* forms and *real* qualities, which he, like Descartes, understands as the thesis that some forms are not accidents but substances (53–57) and that some qualities are not modes of matter but real beings really distinct from it (15–16, 22, 25, 28, 31). Malebranche too concludes the chapter of the *Recherche de la vérité* against substantial forms (bk. 1, chap. 16) by noting that “there is nothing to be said against these terms ‘form’ and ‘essential difference’; doubtless honey is honey through its form, and it is by this that it differs essentially from salt, but this form or essential difference consists only in the different configuration of its parts.” As far as I know, no seventeenth-century philosopher denied the existence of forms in bodies; the question was only whether some of these forms were substances.

9. The Scholastics also recognize what they call “substantial modes,” such as the mode of union between a substantial form and its matter, which contribute to constituting a complete substance, rather than attaching to an already complete substance (Suárez, disp. 32, sec. 1, par. 15). These modes are not themselves properly substances, but belong to the category of substance improperly or “reductively.” Suárez (disp. 32, sec. 1, pars. 13–19) discusses the relationship between the substance-accident and *res*-mode divisions; see Menn forthcoming. Since, for Descartes, the two divisions collapse, he often speaks of a substance-mode rather than *res*-mode or substance-accident opposition. But it is important to recognize that Descartes is not simply substituting a new metaphysical vocabulary for the old Scholastic vocabulary (as Daniel Garber suggests [1992, 68–70]); here, as with forms and qualities, he is making a precise anti-Scholastic statement in the Scholastic vocabulary. (Garber is rather careless with Scholastic terminology in this passage: it is not a Scholastic view, as he says, that “a substance is intimately linked with certain accidents, those that constitute its form or nature or essence” [68].)

10. In the Sixth Replies Descartes affirms once, and denies once, that a substance can be an accident of another substance. Descartes says that “clothing considered in itself is a substance, although it is a quality as referred to the clothed man; and the mind too, although it is really a substance, may nonetheless be called a quality of the body to which it is conjoined” (AT 7:441–42); but earlier he has insisted that although “one substance can belong [*accidere*] to another substance, still, when this happens, it is not the substance itself, but only the mode by which it *accidit* [i.e., its mode of belonging to or union with the other substance] that has the form of an accident; as, when clothing *accidit* to a man, not the clothing itself, but only the being clothed, is an accident” (AT 7:435). (In the first passage,

to be real accidents, since whatever is real can exist separately from every other subject; but whatever can exist separately in this way is a substance, not an accident" (AT 7:434). The Scholastics will object that substances are defined not by their ability to subsist by themselves but by their ability to receive contrary attributes; they will say that an accident, even when it does not *actually* inhere in anything, still has the *aptitude* to inhere; but this sounds forced, and there is some merit in Descartes' claim that the Scholastics are implicitly thinking of real accidents as little substances.¹¹ Descartes criticizes the Scholastics, not for positing qualities and forms that do not really exist, but for ascribing too high an ontological status to the qualities and forms that do exist: fire really is hot, but heat is just a mode, and the Scholastics give it too high a status when they say that it is a *res*, and when they think (implicitly) that it is a substance.¹² In criticizing this Scholastic error, Descartes' intention is not simply to deny the reality of sensible qualities but "to explode the reality of accidents" in general (AT 7:434), whether these accidents are merely sensible, like colors, or whether they are intelligible, like figure and motion.

On this account it becomes much easier to see why a philosopher would want to deny that sensible qualities are real, and why this denial would not draw protests from outraged common sense. But then a new

as often, Descartes is using *quality* broadly for *accident* in general.) There seems to be no real issue between the two ways of speaking. Suárez recognizes that clothing, as an accident in the category of habit, is a substance denominating another substance extrinsically (disp. 53, sec. 1; the Scotists, by contrast, speak as Descartes does at AT 7:435). Descartes insists that *all* real accidents must be analyzed analogously.

11. "When I conceived of heaviness (for example) after the kind of some real quality that was present in gross bodies, then although I called it a *quality* insofar as I referred it to the bodies in which it was present, nonetheless since I added that it was *real*, I was really [*revera*] thinking that it was a substance, just as clothing considered in itself is a substance, although it is a quality as referred to the clothed man; and the mind, too, although it is really a substance, may nonetheless be called a quality of the body to which it is conjoined" (AT 7:441–42). Similarly, Descartes tells Elizabeth that when "we" were involved in the errors of the Scholastics, we attributed certain notions "to the various qualities of bodies, as to weight, heat, and others, which we imagined to be *real*, that is, to have an existence distinct from that of the body, and in consequence to be substances, even though we named them 'qualities'" (AT 3:667). For the thesis that aptitudinal (rather than actual) inherence is essential to accidents, see Suárez, disp. 37, sec. 2; and that the ability to receive contraries is proper to substances (although the ability to subsist by themselves is not), see, e.g., Ockham, *Summa logicae* 1.43 (the sixth *proprium*), following Aristotle, *Categories* c.5.

12. "[W]e do not deny active qualities, we just deny that any more-than-modal entity should be attributed to them; for this cannot be, unless they are conceived as [*tanquam*] substances" (AT 3:503).

puzzle arises: if Descartes, in denying that heat is a real quality, does not deny that bodies are really hot, why does he deny that the heat in bodies “resembles” our idea of heat, or that the term *hot* can enter into scientific explanations? Certainly heat is not a *res*, but neither is sphericity, and this does not stop the term *sphere* from entering into scientific explanations. It is also puzzling why (as Descartes thinks) the prejudices of the senses should incline us to believe that heat is a real quality: do the senses really have a view on which qualities are *res* and which are modes? Again, if the senses do have views on such abstruse ontological questions, why does the practicing scientist have to go against them? To understand how the question of the ontological status of accidents is connected with Descartes’ scientific program, we must examine more closely what it means to say that *x* is a *res* or that *x* is a mode: and we can see this best in the Scholastic discussions that engendered the terminology of *res* and mode.

For the Scholastics, the problem of the ontological status of accidents arises out of the analysis of predication. Whenever we make an assertion of the type “*a* is *b*,” then (on the Scholastic realist analysis), the intellect conceives of the predicate-term “*b*” as signifying a *res*, the form *b*-ness, inhering in another *res*, the *suppositum a*.¹³ But the Scholastics recognize many cases of nonstandard predication, where the proposition “*a* is *b*” can be true even though there is no *res b*-ness really distinct from *a* and really inhering in *a*. In an essential predication like “man is an animal,” the predicate-term signifies a *res*, but a *res* really identical with the subject (*a* and its *b*-ness are said to be *rationally distinct* because, though really identical, they are represented by reason as if they were distinct). This cannot happen when the predication is accidental (if *a* could still exist without its *b*-ness, it cannot be identical with its *b*-ness); but it might happen that the predicate does not signify a *res* at all, as in “Socrates is blind,” where there is no *res* blindness, or in “Socrates is known by Plato,” where there is no *res* knownness. Blindness and knownness are said to be *entia rationis* (in the former case a privation, in the latter case a relation of reason), because, though they are not really beings, they are repre-

13. As St. Thomas says, “what the intellect puts on the subject side, it ascribes to the side of the *suppositum*; what it puts on the predicate side, it ascribes to the nature of a form existing in the *suppositum*” (*Summa theologiae* 1.q13a12). This is only the realist view; for simplicity, I will avoid discussing the nominalist theory of predication. Although Descartes rarely focuses his discussion on predication (or on any other topic in logic: he has a low opinion of the whole subject), it is clear from many incidental references that he presupposes a Scholastic realist theory of predication (by contrast, Hobbes, who was much more interested in logic, essentially repeats Ockham’s account in the first part of his *De corpore*; Calvin Normore and I will compare Descartes and Hobbes on predication in our book *Nominalism and Realism*).

sented by reason as if they were beings.¹⁴ (On another [compatible] analysis of “Socrates is known by Plato,” the predicate signifies, not a knowleness in Socrates, but a knowledge in Plato; here the predicate signifies a *res*, but a *res* not present in *a*, so *a* is said to be *b* by *extrinsic denomination*.) Now St. Thomas seems to think that if “*a* is *b*” is a true accidental predication, and if *b*-ness is not a negation or a relation of reason, and if *b*-ness is present in *a*, then *b*-ness must be a *res* really distinct from *a*. But for later Scholastic realists like Suárez, there is still another question to be asked: is *b*-ness a *res* really distinct from *a*, or is it merely a *mode* of *a*, *a way a is*, which is not itself another *res*?

For Suárez, this is equivalent to the question whether *a* and its *b*-ness are separable from each other at least by divine power. If *b* is accidental to *a*, then *a* can exist without its *b*-ness, but it is more obscure whether *b*-ness can also exist by itself, without inhering in its subject *a* (or in any other subject); if this is not possible, then *b*-ness is not a *res*, but merely a mode of *a*.¹⁵ In general, a form is a mode of its subject (or “modally distinct from it *ex natura rei*”) if the subject can exist without the form but the form cannot exist without the subject; whereas if *either* can exist without the other, they are really distinct as one *res* from another, and if *neither* can exist without the other, they are only rationally distinct.

14. Negations and relations of reason are the only kinds of *entia rationis*, since “every absolute [versus relative] positing [versus negation] signifies something existing in the nature of things” (Thomas, *De veritate* q21a1); some Scholastics distinguish privations as a third kind of *entia rationis*, while others include them under negations. There are also *entia rationis sine fundamento in re* (chimeras), but these arise only in false judgments; I am interested here in the ones that can arise in true (affirmative) judgments. All these quasi-beings are called *entia rationis*, not simply because they have their quasi-existence in relation to the intellect, but because the intellect apprehends them *as if they were beings*: “Since being is the primary object of the intellect . . . the intellect cannot know its opposite, namely non-being, except by somehow imagining [*fingendo*] it as being: and when the intellect tries to apprehend this, an *ens rationis* is produced” (Thomas[?], *De natura generis* c.1). See Suárez, disp. 54.

15. As Suárez notes (disp. 7, sec. 1, par. 19), *mode* is sometimes used more loosely, either for a *res* that modifies another *res* (as in the Thomist description of quality as *modus substantiae*) or for fundamental ways of being such as infinity and finitude, which are only rationally distinct from the *res* they modify. But for Suárez, modes in the strict sense are non-*res* that are modally distinct *ex natura rei* from the *res* they modify, where the test of a modal distinction is that the *res* can exist without the mode but not vice versa (see Menn forthcoming). Note that the principle that God can make any *res* without any other *res* breaks down for modes, not just in that modes cannot exist without *res*, but also in that (in a sense) *res* cannot exist without modes: God can create the *res* *x* without *any* real accidents, and he can create it without *any given* mode, but he cannot create it without *any* modes at all (e.g., he must give it either subsistence or inherence, and he must give any extension *some* figure).

Suárez thinks it is easy to show that some accidents are real and some are merely modes. Suárez does record the opinion of “the pagan philosophers,” including Aristotle, that “the essential *ratio* of every accident consists in actual inherence in a subject,” that is, that no accident can exist by itself without inhering in something else; and “this would be most true if, as seems to have been the opinion of the ancient philosophers, accidents are not *res* on their own, but are merely modes of a first subject.” But as Suárez immediately insists, “the Catholic faith condemns this opinion, at least to the extent that it cannot be true universally,” since in the Eucharist the accidents of the bread and wine continue to exist without inhering in any substance:¹⁶ the pagan philosophers had never seen an accident existing by itself, but every Catholic philosopher has seen God conserve accidents without their subjects, and so he knows that at least some accidents are *res* really distinct from their subjects. But it is also easy to show that some accidents are merely modal. The clearest example is the mode of inherence: if whiteness inheres in a piece of bread, then inherence is in the whiteness; the inherence is accidental to the whiteness and cannot be really identical with the whiteness, since (if whiteness is a real quality) the whiteness can continue to exist without inhering; but the inherence cannot be a *res* really distinct from the whiteness and inhering in the whiteness. For if it were, this inherence could exist without inhering in the whiteness, and so the inherence would have its own inherence as a further accident; if every inherence were a *res* and thus separable from its subject, the white bread would contain an infinity of really distinct inherences. Clearly the regress must terminate in some inherence that is a modal accident and cannot exist without inhering in its subject (this inherence will be really identical with its own inherence,

16. Suárez, disp. 37, sec. 2, pars. 2–3. We know that the accidents of the bread and wine continue to exist, since we still see and otherwise sense them. But the accidents do not continue to exist in the substance of the bread and wine, since these substances are no longer present; nor do they inhere in the body of Christ, both because a glorified body is impassible (and so cannot receive new qualities) and because the body of Christ would have to receive contrary accidents (being leavened in Constantinople and unleavened in Rome, etc.). It is not necessary that *all* the accidents of the bread and wine subsist without a subject, though none of them have a *substantial* subject: some of the accidents may inhere in others, so that only the most basic accidents subsist without any subject at all. Indeed, on the Scholastic realist account, the qualities and other accidents of the bread and wine inhere in the quantity, and the quantity subsists by itself. On all this, see, e.g., St. Thomas, *Summa theologiae* 3.q77a1–2; the nominalists think that the qualities subsist by themselves, and that neither here nor elsewhere is there a quantity distinct from substances and qualities.

so it blocks the regress). The only reasonable conclusion is that the initial inherence of the whiteness in the bread is itself such a modal accident of the whiteness.¹⁷

It can be difficult to tell whether a given accident is a *res* or a mode. Suárez seems to grant a presumption in favor of reality: for God can always create an accident without its subject unless this would involve a logical contradiction, and even if we cannot clearly conceive how the accident could exist without a subject, we should assume that God can bring this about unless we clearly perceive that he cannot. Still, in many particular cases Suárez argues that some accident must be merely modal: this includes all the accidents in the categories of action, passion, where, when, and position, and in the category of quality, it also includes figures. If a body is now cylindrical, God can make it spherical simply by moving its parts locally, without also creating a real accident of sphericity; since God can make a body spherical without any *res* sphericity, it is superfluous to posit any such *res*, and we should conclude that the sphericity in a spherical body is not a *res* but simply a mode of the extension or continuous quantity of the body, a way of being extended that is not a *res* beside the extension. A figure is a “mode of termination,” the way some extension ends: sphericity is being-extended-equally-far-from-the-center-in-every-direction; it is not some *res* added on to terminate the extension.¹⁸

The example of figure suggests a general rule for deciding whether a given quality-term signifies a *res* distinct from its subject:

When predicables that cannot be *simultaneously* verified of the same thing can be *successively* verified of the same thing on account of local motion alone, then these predicables need not signify distinct *res*. “Curved,” “straight,” and the like are of this kind. . . . But this is not so with whiteness and blackness, since something does not become white or black, or hot or cold, merely because its parts are moved locally; and therefore all such things involve *res* distinct from the substance.

17. This is essentially Suárez' argument (disp. 7, sec. 1, pars. 17–18). For more references and a full discussion, see Menn forthcoming.

18. Figure or shape is what results from the outline of a single body (as Suárez puts it, “a mode resulting in a body from the termination of a magnitude” [disp. 42, sec. 4, par. 15]; Descartes describes it as *terminus rei extensae* [AT 10:418]); it is not equivalent to the modern concept of the “configuration” of a system, as the total state of the system resulting from the arrangement of all its parts. Thus the mechanists always say that the qualities of a body are determined by the “figure, size, and motion” of each of its parts, not simply by the figure of the whole body.

This quote is from Ockham (*Quodlibet VII*, 2; cp. *Summa logicae I*, 55), but it could equally have been from Suárez, and it gives the general rule that Suárez in fact uses for determining which qualities are real.¹⁹

From these texts, which are typical of the Scholastic discussion of real qualities, we can see why Arnauld immediately raised the example of the Eucharist: this was the standard (and, as Suárez thinks, decisive) objection to anyone who denies that qualities are real. Descartes had anticipated the objection as far back as 1630, when he told Mersenne that “wishing to describe colors in my way [in a *Dioptrics*], [I was] consequently obliged to explain how the whiteness of the bread remains in the holy Sacrament” (AT 1:179). Descartes thought he could deal with the problem, at the cost of rewriting many details of Scholastic theology, of struggling to fit various doctrinal pronouncements, and generally of getting in over his head. From the Ockham text, we can see why he thought it was worth it. If a quality of bodies, such as heat, is real, then no local motion of the parts of a body can be either necessary or sufficient for the body to become hot; but if heat is merely a mode of the extension of a body, then changes of heat, like changes of figure, can be explained entirely by local motion. It is thus crucial to Descartes’ program in physics to deny the reality of heat: if Descartes is right that our sense organs are affected only by a mechanical communication of motion, then at least the *sensible* qualities of bodies (since these are the causes of our sensations) cannot be real:

To explode the reality of accidents, I see no need to look for any other arguments than those I have already given. In the first place, since all sensation takes place by contact, nothing can be sensed beyond the surface of bodies; but if there are any real accidents, they must be something different from this surface, which is merely a mode [sc., the mode of termination of a body and its surrounding bodies]; therefore, if there are any [real accidents], they cannot be sensed. But who has ever thought that they existed, except because he thought that they were sensed? . . . But since the chief reason that has moved philosophers to posit real accidents has been that they thought sense perceptions could not

19. Suárez and Ockham agree that, because God can make a cylinder spherical just by changing how its parts are located (not creating any *res* sphericity, and annihilating one if it arises spontaneously), we should not posit that *spherical* signifies a *res* besides these parts; the difference is that Suárez thinks that *spherical* signifies *the way* the parts are located, and that this way is a mode *ex natura rei* distinct from the *res*, while Ockham refuses to admit such quasi-entities. (Another difference is that, for Suárez, the immediate subject of the figure is a continuous quantity rather than a corporeal substance, while Ockham refuses to draw such a distinction.)

be explained without them, I have promised to explain each of the senses in detail in my *Physics* [i.e., the *Principles*]; not that I want anything taken on faith, but from what I have already explained about vision in the *Dioptrics*, I thought that those who judge aright could easily conjecture what I could do in other cases. (AT 7:434–45)²⁰

What Descartes is here promising in the *Principles* is just what he had earlier promised in *Le monde*: to show that by positing only God and minds and extended matter (moved and shaped in various ways), we can derive all phenomena, and all sensory perceptions, that we observe in the actual world. If Descartes can make good on this promise, then God *could* have created a world indistinguishable from the actual world without creating any *res* (except human minds) in addition to extended matter; and if so, we should believe that God did in fact create that world, and we should not posit any real accidents or substantial forms in nature.²¹

20. This passage of the Sixth Replies refers back to an argument of the Fourth Replies (AT 7:249, 250–51) that what in bodies immediately affects our senses is only the surface at which we touch the bodies, and that this surface is “not any part of the substance or of the quantity of that body, nor a part of the surrounding bodies,” but only a mode, namely the mode of termination of the body, or the mode of union between it and the surrounding bodies. Here Descartes is taking a stand in a Scholastic debate about the status of surfaces as one of the species of quantity, namely two-dimensional continuous quantity (this includes Aristotelian place as “the surface of the surrounding body,” as Descartes himself notes at AT 7:434 and 3:387); for this debate see, notably, Ockham, *Summa logicae* 1.44–46 and Suárez, disp. 41, secs. 5–7. Descartes apparently thinks (AT 7:433) that the consensus view of “mathematicians and philosophers” is that surfaces are merely modes, *if* surfaces are understood strictly, not just as thin bodies whose depth is ignored, but as lacking depth altogether, so that two contiguous bodies have precisely the same common surface. Ockham insists that surfaces are only bodies with depth ignored, and Descartes thinks that this is an error we are naturally led into by our imaginative representation of a surface (discussion in Rule 14, in AT 11:445–49); since, Descartes says, even geometers frequently fall victim to this, this shows that even a geometrical representation can deceive us by representing a non-*res* (a mode) as if it were a *res*. In fact, Suárez thinks surfaces are *res* distinct from three-dimensional quantities, but it would have been more consistent with his general program, in answering Ockham’s arguments, to interpret them as modes of termination and union, as Descartes thinks the Scholastics generally did and as many of them doubtless did.

21. This is the strategy throughout *Le monde*, made clearest in the “fable” of a “new world” (AT 11:31ff.). Descartes’ argument against positing a form of fire, a quality of heat, and an action of burning really distinct from the particles of the wood, by the thought-experiments of annihilating the forms while leaving all the motions of the particles, or keeping the forms while stopping the motions (*Le monde*, in AT 11:7–8), is very close in spirit and execution to the Scholastic voluntarist arguments by which Ockham and Suárez conclude that figures, actions, and so on are not real accidents. A comparison leaves no doubt that Descartes was aware of such Scholastic arguments and wanted to extend them to prove much more radical conclusions.

Indeed, Descartes proposes to reduce the physical world, not merely to extended matter, but to extension or continuous quantity alone: he argues that there is no need to posit a matter really distinct from this quantity (*Principles* II, 8–9). For Scholastic realists, continuous quantity holds a privileged position among accidents, mediating between substance and the other accidents. Although qualities are not qualified, quantities are quantified: the coldness of a stone is not cold, but its one-foot-long-ness is one foot long, and in general, every continuous quantity is coextensive with the substance it quantifies. Qualities are also coextensive with their substances, but this is only because the qualities are quantified, and this is because the qualities proximately inhere in the quantity, which in turn inheres in the substance: indeed, continuous quantity is a quasi-substance extended throughout the physical world, which is the immediate substrate for all other accidents.²² As St. Thomas notes, continuous quantity can be conceived by the intellect separately from all substance, and is so conceived in geometry; it follows, since “God can do more in actual production than the intellect can in apprehension,” that God can create continu-

22. Descartes was aware of this Scholastic position and apparently regarded it as the normal background assumption: “[T]here is no incompatibility or absurdity in saying that one accident is the subject of another accident, as it is said [*on dit*] that quantity is the subject of the other accidents” (AT 3:355). Ockham gives a brief statement of the realist doctrine of continuous quantity, along with his arguments against it, in *Summa logicae* 1.44 (Ockham thinks that quantities, whether continuous or discrete, are nothing beyond the substances or qualities that they quantify). Suárez presents one realist theory of continuous quantity (and discusses other opinions) in Disputation 40: in section 1, paragraph 6, he notes the “peculiar condition of quantity, which is not only the form by which something else is *quantum*, but is also itself denominated *quanta*, since it is not only the *ratio* on account of which other things become extended and divisible, but is also extended and divisible in itself; nor could it extend something else unless at the same time it were coextended with it, and had its own parts corresponding to the parts of its object.” This self-predication makes quantity more substancelike than the other accidents, so that “it does not have its essential *ratio* in relation to substance, but in relation to itself; whence in the mathematical sciences it is considered abstractly, as if it existed by itself without any relation to a substance” (disp. 37, sec. 2, par. 3). In Disputation 14, section 4, Suárez endorses the usual realist view that quantities are the proximate subjects of corporeal qualities ordinarily, and their ultimate subjects in the eucharistic species. Although it is agreed that the essence of continuous quantity is extension, it is controversial how this extension should be interpreted: Suárez thinks it is neither the distinctness of the parts of the substance, nor their *actual* extension or size, but their *aptitudinal* extension, that is, their *tendency* to occupy a determinate amount of space, and to resist being compressed further or becoming coextended with each other; so a substance can be rarefied or condensed while keeping the same quantity (disp. 40, sec. 4). This is apparently the view Descartes mocks in *Principles* 2.5, of “some who are so subtle that they distinguish the substance of a body from its quantity, and then distinguish this quantity from extension” to account for condensation and rarefaction.

ous quantity without any substance distinct from that quantity, thus actualizing something like Plato's separate mathematicals.²³

This is just Descartes' argument. In the Fifth Meditation Descartes claims a distinct perception of "that quantity which the philosophers commonly call 'continuous,' or the extension of that quantity (or rather of the quantified thing) in length, breadth, and depth" (AT 7:63). This quantity or extension, which is itself extended, is the object of geometry, and, Descartes argues in the Sixth Meditation, God can actualize it by itself. "I know that [material things] are able to exist inasmuch as they are the object of pure mathematics, since I perceive them clearly and distinctly: for there is no doubt that God is capable of producing all things that I am capable of perceiving in this way" (AT 7:71). And "since I know that all things that I clearly and distinctly conceive can be produced by God in the way that I understand them, it is enough that I should be able to understand one thing clearly and distinctly without another, in order to be sure that one is diverse from the other, since it can be produced separately, at least by God" (AT 7:78). So God can create continuous quantity without also creating any matter or forms or qualities really distinct from it. The Sixth Meditation argues that God has created continuous quantity outside us, and if we can explain the phenomena without any *res* beside this, we should believe that this is *all* that God has created. Descartes' Scholastic opponents, like himself, distinctly conceive this *res* continuous quantity, and they recognize its existence in bodies; but then, dissatisfied with what they distinctly understand, they suppose that this is merely an accident of some confusedly imagined substance. Descartes proposes to explain everything through what everyone clearly understands, quantity, without positing any substance or qualities really distinct from it.²⁴ This, then, is how Arnauld knew that "Descartes thinks there are no sensible qualities, but only the various motions of the cor-

23. The comparison with the Platonic mathematical is Thomas' own. Thomas Aquinas, *Summa contra Gentiles* 4.65. Thomas thinks that in the eucharistic species God does in fact conserve quantity without substance, although not without qualities inhering in the quantity.

24. In *Principles* 2.8 Descartes argues that "quantity does not differ from extended substance *in re*, but only in our conception, as number does from the thing numbered." This is in agreement with Ockham, but where Ockham had used this claim to eliminate the superfluous realist quantities in favor of the commonly accepted *res quantae*, substances and qualities, Descartes uses the same claim to reduce the *res quantae* to their intelligible quantities, eliminating any obscure subject distinct from the quantity itself (Descartes had taken this route as early as Rule 14, which already showed familiarity with Scholastic debates about quantity). In *Principles* 2.9 Descartes diagnoses the error of his Scholastic opponents: "[A]lthough some people may say otherwise, I don't think that they *perceive* otherwise about this matter; but when they distinguish the substance from the extension or quantity,

puscles touching us, by which we perceive those various impressions that we then call color, taste, and smell; so that there remain [only] figure, extension, and mobility," which are only modally (or, as Arnauld says, "formally") distinct from bodily substance (AT 7:217–8). Arnauld has simply noticed that Descartes has not argued or assumed that God has created any *res* in bodies beyond extension; so Arnauld assumes, correctly, that Descartes believes that there is nothing in bodies beyond the bare minimum, extension and its modes.²⁵

We can now clear up some of the puzzles that were raised earlier. We have already seen why Descartes thought it was important for the physicist to recognize that the qualities of bodies are not real; we can now see why Descartes thinks that sensible-quality terms like *hot*, and other terms signifying active and passive powers in bodies, should not be admitted in scientific explanation. The term *hot* should not be admitted, at least not as long as it remains the expression of our sensory idea of heat, *not* because heat is not real (since figures are equally unreal), but because the sensory idea of heat is confused and does not represent heat as it is. The

either they understand nothing by the name 'substance,' or they have only a confused idea of incorporeal substance, which they falsely ascribe to corporeal substance; and they consign the true idea of this corporeal substance to 'extension,' which they call an accident, and so they express in words something quite different from what they comprehend in their minds." It is important for Descartes that his opponents have the true distinct idea of corporeal substance (though they refuse to *call* it corporeal substance), so he can claim that he is not introducing any new principles beyond those that everyone understands and accepts (he merely abstains from some old principles). Seeing this allows us to solve a problem that Garber raises for Descartes' argument that the essence of body is extension: "What Descartes needs to establish is that our idea of body is the idea of a thing whose *only* properties are geometrical, a thing that *excludes* all other properties [including all sensory qualities]. But what emerges from the argument from elimination is the idea of a body as a thing at least *some* of whose properties are required to be geometrical. . . . from the fact that *some* bodies are not colored it does not follow that *no* body is really colored, any more than it follows from the fact that some bodies are not spherical [so that sphericity is not 'essential' to body] that no body is really spherical" (1992, 80). But Descartes' argument is safe and (among realists) uncontroversial in isolating a *res*, quantity, which can exist by itself and contains nothing distinct from extension and its modes; Descartes' real burden will be, not to show that this *res* has no other properties (and not to show, what Descartes does not believe, that it is not really colored), but to persuade us that God has created no other *res* attached to this (except human minds), and therefore that this alone deserves the title "body."

25. Arnauld may also have in mind *Dioptrics* (AT 6:84–85), suggesting that light is just a pressure transmitted by the air, and that colors are just the different ways in which bodies receive and reflect this pressure; but this contains nothing nearly as clear, or as radical, as a reduction of all qualities of bodies to modes of extension.

sensory idea of heat does not represent heat as it is, because although heat is only a mode, our idea does not display heat as a mode but instead represents heat confusedly as if it were a *res*.

Of course (since heat is not in fact a *res*) we cannot *distinctly* perceive that heat is a *res*: there is no contradiction in asserting that “heat is [not a *res* but] simply the agitation of particles of the third element” (cf. *Principles* IV, 29). Nonetheless, Descartes thinks that our sensory idea of heat represents heat as a *res* or as if it were a *res* (*tanquam rem*), and that, if heat is not in fact a *res*, the idea will be “materially false” (AT 7:43): that is, without being properly or formally false (since falsehood properly belongs only to judgments), and without necessarily falsifying every judgment in which it occurs, the idea *gives occasion* for error, just by representing *non rem tanquam rem*.²⁶ It is not immediately obvious what it means for an idea to represent its object *tanquam rem*. Sometimes Descartes speaks as if every idea, just by being an idea and a representation, necessarily represented its object *tanquam rem*, so that every idea whose object is not a *res* would be materially false: “since there can be no ideas that are not *tanquam rerum*, then if it is true that cold is nothing other than the privation of heat, the idea that represents this to me as something real and positive [*tanquam reale quid et positivum*] would not undeservedly be called false; and so in the other cases” (AT 7:44). But this is an exaggeration, and there are legitimate ways of representing privations and other *non res*: Descartes says in the Fourth Meditation that he has “not only a real and positive idea of God . . . but also, so to speak, a negative idea of nothing” (AT 7:54), and there is no suggestion that this idea of nothing involves a mistake. But (as Descartes says when Burman notes the conflict between the two passages) “this idea is only negative, and can scarcely be called an idea; whereas [in the Third Meditation passage] the author was taking ‘idea’ properly and strictly” (AT 5:153). The point is that the idea of nothing does not simply represent a negative content but is itself the negation of an idea, and not an idea *simpliciter*; whereas an idea *simpliciter*, which does not manifest the negativity or

26. When Descartes introduces the notion of material falsity in the Third Meditation (AT 7:43–44), it is apparently definitional that ideas are materially false “if they are *non rerum*” or “when they represent *non rem tanquam rem*”; but in the Fourth Replies, “that some ideas are materially false” is “as I interpret it, that they provide the judgment with material for error” (AT 7:231). This latter criterion was not explicitly mentioned in the Third Meditation, but it gives the nominal sense of the phrase “materially false”; the Fourth Replies still insist that the real definition of material falsity, or the *reason* why an idea satisfies the nominal definition, is that it represents *non rem* (whether an objectively grounded negation or mode, or a mere fiction like a chimera) *tanquam rem*.

otherwise nonreality of its object, is *tanquam rei* and will be materially false if its object is not in fact a *res*.²⁷

The most obvious way for an idea to be materially false is for it to represent a negation or privation without being itself a negative idea. This is the example Descartes uses in the Third Meditation to argue that our sensory ideas of heat and cold are confused: “[T]he ideas that I have of heat and cold are so little clear and distinct that I cannot learn from them whether cold is only the privation of heat, or whether heat is the privation of cold, or whether both are real qualities, or neither. And since there can be no ideas that are not *tanquam rerum*, then if it is true that cold is nothing other than the privation of heat, the idea that represents this to me as something real and positive [*tanquam reale quid et positivum*] would not undeservedly be called false” (AT 7:43–4). *Reale quid* here implies *positivum*: since a privation is only an *ens rationis* and not a *res*, if cold is a privation it fails to be a real quality.²⁸ But this is not the only way for cold to fail to be a real quality: since heat and cold might both

27. One might question what it means for such an idea to have a *non res* (say, a privation) as its “object” (compare Wilson 1990). Arnauld objects that, since the idea of *x* is just (the form of) *x* “itself, insofar as it exists objectively in the intellect” (AT 7:206), the idea of a privation must itself have privative form, and so will not be deceptive: “[T]his idea of cold, which you say is materially false, what does it exhibit to your mind? A privation? Then it is true. A positive being? Then it is not the idea of cold” (207). Descartes in his reply agrees that our positive idea of cold is not properly an *idea of cold*, since it is not (the privation) cold itself objectively existing in our mind, but “it often happens in obscure and confused ideas, among which these ideas of heat and cold should be counted, that they are referred to something other than what they are really ideas of” (AT 7:233). This sensory idea is not an *idea of* anything either positive or negative; that is, it is neither an external *res* nor the lack of one objectively present in my mind, but only a conventional sign, with no intrinsic objective content (“having no *esse* outside the intellect”), which God has arbitrarily established in my mind to signify the cold in bodies. But this idea deceives when it is “referred to” or “taken for” cold, although the idea does “represent” or signify the cold in bodies (and causes the associated word *cold* to denominate cold bodies), because it suggests that what it signifies is something positive, as it itself is: “I cannot discern whether it exhibits something to me that is positive outside my sensation or not; and therefore I have an occasion to judge that there is something positive, although perhaps there is only a privation” (233–34). The erroneous judgment arises when I take the idea to resemble *this* external thing: I am able to single out *this* thing in the judgment because it is what the idea is the *sign of*, that is, the condition in bodies that typically accompanies this idea, because God has established nature in such a way that this bodily condition *causes* this idea in my mind.

28. Wilson, apparently not recognizing the Scholastic contrast between *res* on the one hand and *entia rationis* (and modes) on the other, says that “Descartes should [though he does not] allow that the content of a distinct idea can be a privation, but not a non-thing” (1990, 19n6). Wilson wants to reduce the ontological question “Is *x* a *res*?” to the epistemological question “Can *x* be conceived distinctly?”; but figures and motions, as well as privations, can be conceived distinctly, and Descartes is emphatic that none of these are *res*.

fail to be real qualities, and since they cannot both be privations of each other, they would have to be *non res* in some other way. Descartes' point is that both heat and cold may be modes; since our ideas of these (unlike our ideas of figures) do not represent their objects as modes, they represent *non res tanquam res* and are thus materially false.²⁹

This is supposed to explain why (as Descartes thinks) the prejudices of the senses incline us to believe, wrongly, that heat and cold are real qualities. But from a twentieth-century perspective, the *explanans* is more mysterious than the *explanandum*. Surely I can say, "Fire is hot, ice is cold," not only without *judging* that heat and cold are *res* (and not privations or modes) but also without even *suggesting* this, or giving occasion for a false judgment. But from the Scholastic realist perspective, what Descartes is saying makes perfect sense. It could have come straight from St. Thomas.

Thomas thinks that whenever the intellect forms a subject-predicate judgment, it conceives of the predicate as signifying one *res* inhering in another *res*: as Thomas says, "what the intellect puts on the subject-side, it ascribes to the side of the *suppositum*; what it puts on the predicate-side, it ascribes to the nature of a form existing in the *suppositum*" (*Summa theologiae* 1.q 13a12). But it may turn out that the predicate does not in fact signify any *res* inhering in the *suppositum*; indeed, in the passage I have just cited, Thomas is talking about what happens when we predicate something of itself, so that there is no composition of form and *suppositum* corresponding to our judgment. If the predicate does not signify a *res* inhering in the *suppositum*, then, as Thomas says, we are understanding the thing *aliter quam sit*, "otherwise than it is" (q13a12 ad3).

Not all judgments of this kind are false, however: as we have seen, they can be true when the predicate signifies a negation or privation or *relatio rationis*, or when what it signifies is really identical with the *suppositum*, or when it denominates extrinsically (or, for post-Thomist realists, when it signifies a *mode* of the *suppositum*). So Thomas must face the obvious objection: "[E]very understanding that understands a thing otherwise than it is, is false." (q13a12 obj3); so how can these other kinds of judg-

29. Alternatively, heat and cold might denominate extrinsically: they would then be *res* that are not *in* the hot and cold bodies, but denominate them hot and cold by some relation other than presence. In this case our ideas of hot and cold would be deceptive, not precisely by representing *non rem tanquam rem*, but by representing *rem non in re tanquam rem in re*. Although Descartes usually treats heat and cold as modes, at least one text apparently treats properly *sensible* qualities (but not active powers) as extrinsic denominations from our sensations. See n. 35 below.

ments be true?³⁰ Thomas replies that there are two ways of taking the phrase *aliter quam sit*: “[T]he adverb *otherwise* can determine the verb *understand* either on the side of the understanding or on the side of the thing understood.” If it is taken the second way, Thomas grants the proposition that “every understanding that understands a thing otherwise than it is, is false”; this is equivalent to saying that “every understanding that understands a thing *to be* otherwise than it is, is false” (q13a12 ad3). But if the adverb is taken on the side of the understanding, Thomas denies the proposition, “for the understanding’s way of understanding is not the same as the thing’s way of being” (to say that the “ways” [*modi*] of understanding and being differ is to say that we understand the thing “otherwise” than the thing is). On Thomas’ theory, we signify things, not necessarily in the way that they are in themselves, but in the way that we understand them (*modus significandi sequitur modum intelligendi*; q45a2 ad2). Typically the *modus intelligendi* in turn corresponds to the *modus essendi*, but sometimes the *modus intelligendi* will diverge from the *modus essendi*, and yet we can still signify the things and form true judgments about them.³¹ In particular, whenever we form an affirmative judgment about God, we understand him “compositely” and thus under-

30. Note that Thomas and other Scholastics treat judgment as an act of the understanding (*intellectus*). Descartes argues in the Fourth Meditation that judgment is, rather, the will’s assent to an idea presented to it by the understanding. This does not make too much difference for the issues I am concerned with here. The immediate question in St. Thomas is whether there can be true affirmative judgments about God: since there is no composition of any kind in God, every affirmative judgment about God must understand him otherwise than he is.

31. Thomas generally thinks that the form of our words reflects the form of our thoughts accurately enough, but that the form of our (true) thoughts may not reflect the form of the *res*; so we can name God in the way that we can understand him, but not in the way that he is in himself. In particular, a concrete name (“wise”) signifies God as if he were a form-*suppositum* composite, and an abstract name (“wisdom”) signifies him as if he were a form inhering in a *suppositum*; both are applicable to God, who is a simple subsisting form, but neither signifies him as he is (q13a1 ad2). The doctrine that Peter Geach (1972, 318–19) denounces as a “muddle” of the “scholastic manuals” (“that a thought of things *as being, as if they were*, what they are not, may both be inescapable for minds like ours and *not be* false thought”) is in fact Thomas’ own position. (Geach wants Thomas simply to be saying that “our mind in thinking need not . . . mirror the structure of the world,” but not that it *normally* does, or that the discrepancy, when it does not, involves representing something *as if it were* what it is not, and so gives occasion for error.) Nor is the position as confused as Geach suggests: I can represent something in a way that involves a fiction, without assenting to that fiction. In a striking passage, Thomas actually says that, because of the divergence between the *modus intelligendi* and the *modus essendi*, we can legitimately *deny* such propositions as “God is wise” (though we can also, of course, legitimately *affirm* them): “[A]s far as the *res significata*, whatever is *aliquo modo* in God is truly attributed to him

stand him otherwise than he is; but our understanding is not false, since “it does not say *that he is composite*, but that he is simple” (q13a12 ad3).

The upshot is, for St. Thomas, that although there are true judgments that understand something otherwise than it is, these are true in an abnormal way. In the normal true judgment “Socrates is wise,” the composition of the judgment reflects a structure *in re*, since wisdom is a *res* existing in Socrates; the abnormal true judgment “God is wise” fails to reflect the structure *in re*, and this is because, “on account of our intellect’s connaturality to composite things . . . we can apprehend and signify simple subsistents only in the manner of [*per modum*] composite things” (q13a1 ad3, rearranged). Although both judgments correspond to reality in a weak, Tarskian sense of *correspond*, only the former judgment corresponds to reality in the stronger sense that it *structurally corresponds*.³² But whenever we form a judgment, we are *tempted* to believe that our judgment structurally corresponds to reality, that we understand the thing as it is; so the true judgment “God is wise” tempts us into the false judgment “there is a real wisdom, really distinct from God and really existing in God.” Much of the *Summa theologiae* (and of Suárez’ *Metaphysical Disputations*) is devoted to refuting these falsehoods suggested by our true judgments; but even when we know that God is simple, it still *looks* as if there were a real accident of wisdom in God, just as the sun continues to *look* smaller than the earth. Where the predicate of a judgment signifies an *ens rationis*, it is fair to use Descartes’ language and say that the concept of the predicate is “materially false,” since it gives occasion for error and does so just by representing *non rem tanquam rem*.³³ In at least some

... but as far as the *modus* that they signify of God, they may be denied: for each of these names signifies some definite form, and in this way they are not attributed to God. . . . And therefore they can be denied of God absolutely, since they do not apply to him through the *modus* that is signified: for the *modus* that is signified is as they are in our understanding . . . but they apply to God in a higher *modus*” (*De potentia* q7a5 ad2). The denial is thus a legitimate (though extraordinary) precaution against errors I might be led into by the original true affirmation.

32. If I may be allowed an ethnic joke, you don’t have to correspond to reality to correspond to reality, but it helps.

33. Similarly, when (as, for Thomas, in “God is wise”) the predicate signifies something really identical with the *suppositum*, the occasion for error arises because we signify *unam rem tanquam duas res*. In this case we might prefer to say that the judgment itself (or, for Descartes, the composite idea to which the judgment is an assent) is materially false, although the judgment is formally true. Recall from the *De natura generis* that *entia rationis* are imagined (*ficta*) by the intellect as if they were real beings, and so give occasion for error. Seventeenth-century mechanists, picking up this Scholastic theme, also warn against this kind of temptation to error and use it to symbolize false positings in general: “[B]ecause we

cases, we can overcome the temptation to error by rephrasing the judgment in a form that does correspond to reality, as we can replace “Socrates is known by Plato” by “Plato knows Socrates.”

Once we understand how the issue of the truth of our judgments is distinguished from, but also connected with, the issue of their (structural) correspondence to reality, we can see why Descartes thinks that we are tempted to believe that heat is a real quality in fire. Since we habitually make the true judgment that fire is hot, we are also tempted to make the false judgment that this first judgment corresponds structurally to reality, or that the ideas involved in this judgment represent things as they are: that is, that heat is a *res* really distinct from the fire and really present in the fire. Since heat is not in fact a *res*, we do not perceive heat as it is; this is what it means to say that heat *as we perceive it* is not in the fire. This is also what it means to say that the heat in the fire does not *resemble* our idea of heat: the resemblance we are tempted to believe in is a *structural* resemblance or correspondence between our judgment “Fire is hot” and the realities that make that judgment true.³⁴ Since heat is not a *res* and since the idea of heat is *tanquam rei*, the idea of heat gives occasion for error, and for this reason it should be avoided in scientific judgments.

have been conversant with them [sensible qualities] before we had the use of reason, and the mind of man is prone to conceive almost everything (nay, even privations, as blindness, death, &c.) under the notion of a true entity or substance, as itself [the mind] is, we have been from our infancy apt to imagine that these sensible qualities are real beings in the objects they denominate” (Boyle 1991, 31).

34. Twentieth-century scholars have caused much mischief by using such sentences as “Heat *as we perceive it* is not in the objects” or “The heat that is in bodies *does not resemble* our idea of heat,” without inquiring into the meaning of the “as” phrase, or the sense in which ideas might be expected to resemble external objects; we can interpret these Cartesian affirmations only by understanding Descartes’ general theory of cognitive representation, much of which is taken over from Scholastic realism. By interpreting them, instead, through vague common-sense notions (or through more recent philosophy), many scholars have concluded that Descartes denies that bodies are really colored, or that he can affirm this only by using a perverse sense of “color.” Margaret Wilson writes, “I don’t see that there can any longer be reasonable doubt that major early modern philosophers—with the exception of Berkeley—saw their commitments to mechanistic science as dictating acceptance of what has come to be called the ‘error theory’ with respect to colors, odors, tastes, sounds and the like: in seventeenth century terms, the claim that the senses deceive us in leading us to construe such experienced qualities as resembling real features of external objects” (1992, 234). The “error theory” is therefore supposed to be a translation of this seventeenth-century claim. Unfortunately, Wilson does not spell out what she means by “error theory,” and different contemporary philosophers seem to use the term in stronger and weaker senses. Most strictly, it should mean that all (affirmative) color judgments are false. *Principles I*, 69–70 (etc.) makes it clear that Descartes did not believe this; nor did he believe the weaker claim that all color judgments *presuppose* some false judgment about the nature

Even though the idea of heat is materially false, it can still be used in true judgments; but in science we should be concerned not only about the content but also about the form of our judgments, not only that they are true but also that they represent things as they are, and so do not give occasion for error. So, Descartes says, “it is the same in content [*in re*], if we say that we perceive colors in objects, as if we said that we perceive something in objects, we do not know what it is, but that produces in us a certain very clear and manifest sensation, called the sensation of colors. But there is a very great difference in the manner of judgment [*in modo judicandi*]” (*Principles I*, 70). Because of this difference in *modus judicandi*, we should beware lest the true judgment “Fire is hot” tempt us to believe that the *modus essendi* of heat in bodies is the same as our *modus judicandi*, and so tempt us to believe that we know what sort of thing heat is (at least, that it is a *res*), when in fact our senses tell us only what things are hot, and not what heat itself is. Once Cartesian physics has discovered what it is in bodies that causes the sensation of heat, then there is no objection to using the word *heat* to express the new distinct idea we will have of heat as a certain mode of extension.³⁵

One major task of Cartesian physics is to explain what structures *in*

of colors. Descartes did think our color judgments structurally *suggest* (and are often accompanied by) a false judgment, and perhaps we could call this view an error theory. But if so, we should say what the error is: and it is not enough to describe it as the erroneous belief that colors in bodies *resemble* our ideas of color, unless we specify *in what respect* they are thought to resemble them. Wilson’s statement of the theory in seventeenth-century terms is also unclear: apart from the difficulty about resemblance, “such experienced qualities” might mean either “our experience of such qualities” or “such qualities *as we experience them*,” and, if the latter, the force of the “as” phrase is unclear; and “real features” is ambiguous between “features that objects really have” and “real accidents” in Descartes’ sense.

35. This is how Descartes speaks of heat and other sensible qualities in the *Principles* and *Le monde*. But Arnauld attributes to Descartes a different doctrine of sensible qualities, according to which (although bodies are really colored, and although there are no real colors in bodies) colors are not modes but extrinsic denominations, denominating bodies from the sensations they cause in us; and there is at least one passage in Descartes that supports Arnauld’s reading. “As for these Cartesians who are not willing to admit that our soul is green or yellow or stinking, I don’t know what he [Malebranche, in the eleventh éclaircissement of the *Recherche de la vérité*] means. For if those he is speaking of claim that sensible qualities are modifications of extension, and not of our soul, they are not Cartesians on this point; but if, admitting that these are modifications of our soul and not of extension, they only maintain that this does not have the result that our soul should be called green or yellow or stinking, this is only a question of words, on which I don’t believe they would be as wrong as this author imagines. We simply need to understand what is in question. Two Cartesians are going for a walk. One says, ‘Do you know why snow is white, why coal is black, and why rotting carcasses smell so bad?’ ‘What silly questions,’ answers the other. ‘Snow isn’t white, nor is coal black, nor do carcasses stink; it’s your soul that’s white when

rebus make our ordinary judgments true. Descartes is asking a very Scholastic question, but his conclusion is that the *modus essendi* of physical things differs from our *modus judicandi* much more radically than any Scholastic had believed. Descartes' treatment of the attributes of body is rather like the Scholastic treatment of the attributes of God: since God has given us the Scriptures, everything the Scriptures say about God must be true; but since the Scriptures, given to guide us in our weakness, are written in human language and suited to human modes of understanding, they do not represent God as he is (and so tempt us into false judgments). Theology has the task of explaining what structures *in rebus* make the

you look at snow, and black when you look at coal, and stinks when you're near a carcass.' I assume they agree on the basic doctrine, but I ask which of them has the better way of speaking? I maintain that it's the first, and that the other's criticism is unreasonable. For, to begin with, there are infinitely many *denominations* [Arnauld's italics mark the Scholastic technical term] that do not presuppose modifications in the things to which they are attributed. Is is speaking wrongly to say that the statue of Diana was worshiped by the Ephesians? But the honor these idolaters paid to the statue was not a modification of the statue, but only of the idolaters" (*Des vraies et des fausses idées*, in Arnauld 1775–83, 38:313). (Arnauld then lists further reasons why the first Cartesian's language is preferable, as corresponding both to God's intentions in giving us sensations, and to human intentions in giving meaning to sensible-quality terms.) The view that sensible-quality terms are said of bodies truly but by extrinsic denomination from human beings (like *healthy*, said of a food rather than of an animal) is supported by a passage of the Sixth Replies, in which the meditative persona, sorting through his ideas, "recognizes that nothing belongs to the essence of body, except that it is a long, broad, and deep thing, capable of various figures and of various motions; and that its figures and motions are just modes, which cannot exist without it by any power; but that colors, smells, tastes, and the like are only sensations existing in my thought, which differ from bodies no less than pain differs from the figure and motion of the projectile that induces the pain; and, finally, that heaviness, hardness, and the powers of heating, attracting, and purging, and all the other qualities that we experience in bodies, consist only in motion or the privation of motion, and in the configuration and location of the parts" (AT 7:440). This passage is curious in that it requires a sharp division between sensible qualities (analyzed as extrinsic denominations) and active powers (analyzed as modes); and yet several examples, notably heat and heaviness, seem to belong equally to both classes. Descartes might, like some Scholastics (cp. Suárez, disp. 42, sec. 4), distinguish two qualities of heat; but only shortly before (AT 7:434) he argued that sensible qualities cannot be distinct from surfaces because only surfaces *act* immediately on our senses. The truth is that Descartes has not worked out a consistent way of speaking and that he does not much care. Fire is really hot, and there is no real heat in fire, but only a mode in it that causes our sensation of heat; if we say that heat proper is our sensation, denominating the fire extrinsically, then the quality of heat must have a *fundamentum* that is a mode in the fire and a *complementum* in us. "Heat as it is in the body" (as Descartes sometimes says) is the mode, and usually Descartes is content to call it heat without qualification; but to remind us of its unlikeness to the heat that is in our minds, he is prepared on occasion to deny that it is heat, as Thomas is prepared to deny that wisdom as it exists in God is wisdom.

scriptural assertions true; and theology will in fact explain how these assertions can all be true of God even though God is entirely simple and incomposite. Likewise, for Descartes, God has given us nature as a guide, so what nature tells us about bodies must be true; but since nature speaks to us in the language of sensation, suited for practical guidance rather than for theoretical understanding, the teachings of nature do not represent bodies as they are (and so tempt us into false judgments), and physics has the task of explaining what structures in bodies make the teachings of nature true. Descartes is even ready to say that bodies are *simple* beings, (*Notae in programma*, in AT 8b:350–51), because, although they have a structure of parts, they do not have an inherence structure of *res in re*. For Descartes' Scholastic realist opponents, bodies contain first prime matter, then a substantial form inhering in the matter, then a continuous quantity inhering in the substantial composite, then real qualities (and whatever other real accidents there may be) inhering in the quantity. Descartes systematically eliminates all this composition of *res in re*: matter is really identical with continuous quantity (*Principles II*, 8–9, Rule 14, *Le monde*, in AT 11:35–36), forms other than the mind are not substances but simply collections of mutually sustaining qualities (AT 3:461, *Le monde*, in AT 11:26), and these qualities themselves are not *res* but simply modes of continuous quantity. By arguing that continuous quantity alone, without any additional matter or form or qualities, can produce the phenomena of the world we perceive, Descartes showed that the structure of the world can be radically different from the structure of our ordinary judgments about the world, so different that it becomes hopeless to investigate the world as the Scholastics did, by beginning with the structure of language and then noting the points at which the world diverges from our language. The structure of form in *suppositum* as *res in re* would be a linguistic structure in reality: but reality need not exhibit a linguistic structure at all. That, more than any particular reductionist program, and much more than the supposed doctrine that bodies are not really colored, is the lesson of Descartes' denial of real qualities.