

Toward 'Perfect Collections of Properties': Locke on the Constitution of Substantial Sorts

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I Introduction

Summing up the lessons of the final book of his *Essay Concerning Human Understanding*, Locke describes two '*ways to enlarge our Knowledge*, as far as we are capable.'¹ One involves the cultivation of our capacity for demonstrative reasoning, the other the proper framing of the ideas from which any such reasoning must issue and on which mere 'experimental Knowledge' (IV.iii.29: 560) is likewise founded. Under the latter heading, we are urged to aim not only for 'clear' and 'distinct' ideas, but also for 'perfect' ones. Finally, a laconic insertion in the fourth edition specifies how the perfection of one class of ideas is to be pursued:

And if they be *specific Ideas of Substances*, we should endeavor also to make them as complete as we can, whereby I mean, that we should put together as many simple Ideas, as being constantly observed to co-exist, may perfectly determine the *Species*.... (IV.xii.14: 648)

1 John Locke, *An Essay Concerning Human Understanding*, P.H. Nidditch, ed. (Oxford: Clarendon Press 1975), book IV, chapter xii, §14: 648; also IV.xii.6-7: 642-3. The expression in my title appears in the marginal summary of III.vi.19-20: 449. All italics in citations from the *Essay* are Locke's; boldface indicates my emphasis.

I believe that a failure to appreciate the line of thought encapsulated in this sentence has stood in the way of an adequate understanding of Locke's views regarding the respective roles of nature and the understanding in constituting substantial sorts, as expressed in his doctrine of their 'real' and 'nominal essences.' In this paper, I venture an explication of Locke's often overlooked norm of perfection in the light of which this perennial area of his philosophy assumes a more sophisticated look than even his most well-meaning critics have discerned in it.

The nature of the resulting reading should emerge from the following sketch of the course of argument I propose to offer in its defense. In Section II, I begin by examining Locke's claims about the 'properties' of substantial sorts. We can only understand his claims, I argue here, if we recognize that the sorts characterized by these properties are neither exhaustively determined by our abstract ideas nor constituted by nature independently of the human understanding. Section III then canvasses the various purposes served by Locke's injunction to perfect the substance-ideas used in scientific discourse, concluding that all are subordinate to the pursuit of collections of perceptible qualities that correspond to some shared structure at the microscopic level. This suggests a recognizable form for the required compromise between classificatory conventionalism and essentialism: the natural sorting of substances depends constitutively on the interests reflected in a particular norm of scientific inquiry. Finally, Section IV draws on the resulting picture of natural kinds to illuminate Locke's seemingly noncommittal remarks about whether there are 'prefixed bounds' in nature, and addresses its consequences for his account of language.

The central role in motivating my reading will be played by an exegetical dilemma seemingly posed by a conflict between two of Locke's central themes: his exhortation that we perfect our ideas of substantial sorts so as to make them better approximate 'standards made by nature,' and his dismissal on metaphysical grounds of any claim that nature distinguishes substances into species. Most recent commentators have stressed the second theme while either ignoring the first or failing to recognize the standards in question as naturally privileged kinds. A minority tradition has pointed to the first theme while either ignoring the second or reinterpreting it as a merely epistemological thesis. What has gone unappreciated is the availability of a reading that respects Locke's grounds for rejecting 'specific differences in nature,' while interpreting the rejection in such a way as to leave it *compatible* with the claim that our sorting of substances answers to naturally privileged kinds.

This possibility is easily obscured by a misconception of the relevance of Locke's semantic theory. It can be tempting to assume that his account of the names of species reflects his embrace of a radically conventionalist view of substantial sorts. All the sorting expressible in language, he

famously insists, is the 'Workmanship of the Understanding' (III.iii.13: 415). Shouldn't this doctrine debar him from professing reference to independently constituted kinds that serve as standards against which to measure the understanding's ideas? Whatever the answer, we will see that far from relying on this point, Locke even disputes it. It should already give pause that early drafts of the *Essay* combine the same semantic theory with an unperturbed readiness to speak of a species as it is distinguished 'by nature.' More importantly, Locke comes to be painfully aware of the threat posed by the above question. When he addresses it, he does so not by renouncing reference to naturally privileged kinds but rather by attempting to circumvent the *prima facie* expressive limits of his semantic theory. And while the most explicit of these attempts run afoul of his own anti-essentialist insights, I will propose that an implicit one reveals the outlines of a suggestive Lockean theory of natural kinds and their names.

II Imperfect Collections of Properties

1. Beholdenness to reality

Any interpretation of Locke on the 'names of substances' must accommodate one basic fact. Locke holds that each substance-predicate's extension is fully determined by the abstract idea to which that predicate has been 'annexed' (and which it thereby 'signifies'), an idea known as the respective sort's 'nominal essence.' Though I have recast it in current semantic terminology, this is the thesis he plainly intends when he identifies 'conformity to the *Idea*, to which the name is annexed' as 'that which gives a right to that name' (III.iii.12: 414). Illustrating one direction of the implied biconditional, he adds that 'nothing can be a *Man*, or have a right to the name *Man*, but what has a conformity to the abstract *Idea* the name *Man* stands for.' A later passage stresses the converse: it is 'the complex *Idea*, to which that name is annexed, that makes the *Species*: and as any particular parcel of Matter answers that *Idea*, so the name of the sort belongs truly to it' (III.vi.35: 462).² What the 'conformity' of thing to

2 Cf. Joseph LaPorte, 'Locke's Semantics and the New Theory of Reference to Natural Kinds,' *Locke Newsletter* 27 (1996) 41-64, at 44-6. Note Locke's semantic vocabulary: words 'belong truly' to things, which in turn 'have the right to' names. By contrast, it has long been recognized that neither 'signifying' nor 'standing for' is a reference relation (e.g. Norman Kretzmann, 'The Main Thesis of Locke's Semantic Theory,' *Philosophical Review* 77 (1968) 175-96); the same holds for the relation between a word and its 'meaning,' defined as the '*Idea* it stands for' (III.iii.10: 413). We will soon see

substance-idea involves is scarcely more open to debate: a thing conforms to the complex idea signified by a substance-name just in case it possesses each of the observable qualities collected in that idea.³ (For ease of exposition, I will regularly join Locke in speaking as if these qualities themselves, rather than ‘simple ideas’ thereof, were contained in a complex idea.⁴)

Nonetheless, there are externalistic pressures in the *Essay* that can call into question the stability of Locke’s commitment to this semantic framework.⁵ To appreciate this, we need only consider the difference Locke most often points to between ideas of substantial sorts, such as the ideas of a man and of lead, and ideas of modal sorts, such as the ideas of a triangle and of beauty. By contrast with ideas of modes, substance-ideas are ‘made all of them in reference to Things existing without us, and intended to be Representations of Substances, as they really are’ (II.xxx.5:

that a substance-name is properly ‘referred to’ *neither* the idea it ‘signifies’ *nor* the class of those things to which it ‘belongs truly.’ Finally, a principal task for this paper will be to explain the relation between a Lockean natural kind and the name that is ‘used for’ it, the name by which it is ‘called.’

- 3 For a lone dissent, see Martha Brandt Bolton, ‘Substances, Substrata, and Names of Substances in Locke’s *Essay*,’ *Philosophical Review* 85 (1976) 488-513. On Bolton’s reading, the ‘confused *Idea* of Substance’ included as a component in each idea of a substantial sort (II.xii.6: 165, II.xxiii.3: 297, III.vi.21: 450) plays the role of an *actuality operator*. As an example, assume that the qualities *rational* and *animal* exhaust the constituent qualities in the abstract idea of man. Bolton denies that being a rational animal need be a sufficient condition for conforming to this idea. Instead, roughly, something in any possible world will conform to the idea provided it possesses all properties flowing from the explanatory ‘internal constitution’ shared by all *actual* rational animals (worries about ill-definedness are addressed, in my view superficially, at 507-8n45). It should soon become apparent that I share much of the motivation behind this reading. However, I will argue that we can embrace a strong version of Bolton’s key insight (cf. 506-8) that the kind *represented* by a substance-idea is to some degree independent of the idea’s *descriptive* content without insisting, in the absence of specific evidence, that Locke treats conformity to a nominal essence as modally rigid.
- 4 This habit, together with Locke’s acknowledged use of ‘idea’ where we would expect ‘quality’ (II.viii.8: 134), may reflect more than an innocent ambiguity: see Jonathan Bennett, ‘Ideas and Qualities in Locke’s *Essay*,’ *History of Philosophy Quarterly* 13 (1996) 73-88.
- 5 They were acutely perceived by Leibniz in his comment on III.xi.24 (*New Essays on Human Understanding* [1703-5], trans. P. Remnant and J. Bennett (Cambridge: Cambridge University Press 1981), 354). Discussing the same passage in Locke, Michael Ayers warns not to ‘import into his arguments contradictions and tensions that do not exist there’ (*Locke: Epistemology and Ontology* (London: Routledge 1991), vol. 2, 76). I hope to vindicate Leibniz.

374; see also II.xxxii.18: 390, II.xxx1.14: 384). Later passages characterize such representational intent as a supposition of conformability: substance-ideas 'carry with them the Supposition of some real Being, from which they are taken, and to which they are conformable' (III.v.3: 429); they are 'supposed conformable to the reality of Things, and are referred to Standards made by Nature' (III.ix.11: 481). What does this supposition of initial and ongoing conformability of idea to reality consist in?⁶ Rather than a belief about a substance-idea's empirical origin or the existence of something answering to it, the 'supposition' in question proves to be the *normative stance* of holding the idea answerable to an extra-mental standard or 'archetype.' (Introduced in II.xxx-xxxii, Locke's vocabulary of 'archetypes' and the 'ectypes' that are 'referred' to them serves to express a direction of fit.) Most importantly, the proper archetype in nature to which to hold a substance-idea accountable is not a particular substantial thing, but rather the set of perceptible qualities characteristic of the respective *sort* of substance. The normative stance just described finds its expression in Locke's thesis that the nominal essence of a sort of substance can and indeed always will *inadequately* represent the perceptible 'properties' possessed by that sort, those perceptible qualities that result from the microscopic 'internal constitution' that is its 'real essence'.⁷

6 I follow Bolton in posing this question as a challenge to conventionalist readings ('Substances, Substrata, and Names,' 495-9).

7 Here I endorse the customary view that Locke employs a notion of the 'internal constitution' or 'real essence' of a *sort* of substance, understood as an *aspect* of the internal constitution of each individual of the sort. While this assumption should garner support throughout my paper, David Owen's thesis that real essences and internal constitutions are possessed only by particulars merits response ('Locke on Real Essence,' *History of Philosophy Quarterly* 8 (1991) 105-18). Where Locke identifies a sense of 'real essence' that '*relates to a Sort, and supposes a Species*' (III.vi.6: 442), Owen construes him as referring to the internal constitution of a particular, considered as the source of those qualities rendered essential by subsumption of this particular under a sort determined by a nominal essence (113-14). Other passages are resilient to Owen's strategy, though. Consider the parallelism of 'the *nominal Essence of Gold*' and 'the *real Essence*' (III.vi.2: 439), or Locke's claim that knowledge of the 'Properties of *Gold*' and other substances could be obtained if we had 'specifick *Ideas* of their real Essences in our own Minds' (IV.vi.11: 585; cf. IV.xii.9: 645). For 'internal' or 'real constitutions' of substantial sorts, see II.xxxi.10: 382, III.vi.3: 440, and IV.vi.15: 590. Locke is plainest in reply to Stillingfleet: while the particular 'internal constitutions' of finite things are alterable, the abstract 'internal constitution or real essence of a species' is 'unchangeable' (First Letter [1696-7], in *Works* (London, 1823), vol. 4: 90-1). Still, he makes do wherever possible with a notion of real essence less liable to suggest a substantial form: the internal constitution of a particular. Indeed, I believe the entirety of chapter III.iii on 'General Terms' should

The first mention of this theme occurs early in Locke's discussion of our ideas of substantial sorts: 'For he has the perfectest *Idea* of any of the particular sorts of *Substance*, who has gathered, and put together, most of those simple *Ideas*, which do exist **in it**' (II.xxiii.7: 299). Yet 'it is commonly hard to know all the simple *Ideas*, which are really in any *Substance*,' whence our ideas of substances remain 'imperfect' (II.xxv.8: 322). As such, they deserve to be considered 'inadequate ideas': ideas that are 'but a partial, or incomplete representation of those Archetypes to which they are referred' (II.xxxi.1: 375) and thus 'are not what the Mind intends them to be' (II.xxxi.13: 383). Locke devotes a large part of his chapter on 'Adequate and Inadequate *Ideas*' to establishing that 'it is impossible we should have adequate *Ideas* of any *Substance*, made up of a Collection of all its *Properties*' (II.xxxi.8: 381). After listing the various qualities that 'put together, usually make the complex *Idea* in Men's Minds, of that sort of Body we call *Gold*,' he adds:

But no one, who hath considered the *Properties* of Bodies in general, or of **this sort** in particular, can doubt, that **this, call'd Gold**, has infinite other *Properties*, not contained in that complex *Idea*. Some, who have examined **this Species** more accurately, could, I believe, enumerate ten times as many **Properties in Gold, all of them as inseparable from its internal Constitution**, as its Colour, or Weight: And 'tis probable, if any one knew all the *Properties*, that are by divers Men known of **this Metal**, there would be an hundred times as many *Ideas*, go to the complex *Idea* of Gold, as any one Man yet has in his; and yet, perhaps, that not be the thousandth part of what is to be discovered **in it**. (II.xxxi.10: 382; see also II.xxxii.24: 393)

Parallel considerations show that '*all our complex Ideas of Substances are imperfect and inadequate*' (II.xxxi.11: 382). As we will see, this line of thought recurs prominently throughout Book III.

Locke's contention that our substance-ideas only inadequately represent the respective sorts of substances poses a *prima facie* challenge to the nominal-essence semantics described above. If the perceptible properties of gold outstrip the qualities collected in its nominal essence, might there not exist a piece of metal displaying each of the latter while lacking one or more of the former? Since the properties of a sort are its 'insepa-

be understood in this manner, as Owen reveals it can be. Owen's scrupulously nominalist reading of this chapter is certainly supported by its entirely different alignment of the perishable/permanent distinction with that between real and nominal essences (III.iii.19: 419).

table' qualities, such an object would apparently *fail to be gold* despite conforming to its nominal essence.⁸

2. *The semantically innocuous reading*

There remains a construal of the imperfection claim according to which it poses no threat to Locke's semantic theory. (Remarkably, I know of only one commentator who has explicitly acknowledged his commitment to this reading,⁹ though it will be seen to follow from the customary understanding of substantial sorts' real essences). On this 'semantically innocuous' reading, it is a conceptual truth that all properties of a sort of substance *necessarily accompany* the conjunction of qualities in its nominal essence. Of course, we are rarely in a position to recognize this necessity (since, among other shortcomings, we lack ideas of the corpuscular textures underlying secondary qualities). At best, on this reading, repeated experience enables us to *guess* that malleableness is necessarily attendant on possession of 'a certain Colour, Weight, and Hardness' (II.xxxi.6: 379). Whether we are *right* when we do in fact 'look on' this quality as a property of the sort of metal thus defined can never be known (advocates of this reading will have to discount Locke's ready appeal to 'the Properties we discover in that Body,' as well as his above-cited assurances regarding the myriads of properties an accurate examination can make known). Locke actually says in this passage that the putative property malleableness 'has no necessary connexion' with the sort's nominal essence, but this poses no genuine difficulty for the semantically innocuous reading: the epistemic modesty urged in Book IV suggests that he really means 'no necessary connexion, that we can discover' (IV.vi.8: 583). In fact, remarks from that book might even appear to motivate the view that any additional properties *would* have to be necessary concomitants of the collection already in the nominal essence. I may expand my nominal essence to make it 'consist of more simple *Ideas* than before,' Locke writes,

yet still, it not containing the real Essence of any Species of Bodies, it helps me not certainly to know (I say to know, perhaps, it may to conjecture) the other remaining Properties of that Body, farther than they have a visible connexion, with some or all of the simple *Ideas*, that make up my nominal Essence. (IV.xii.9: 645)

8 Bolton's explication of Locke's semantics (summarized in note 3) *does* allow an object in a *possible but non-actual* world to 'conform to our description of gold, but lack some of the properties typical of gold, and so fail to *be gold*' ('Substances, Substrata, and Names,' 507-8).

9 Owen, 'Locke on Real Essence,' 111

Strictly speaking, this is inconclusive: connection with the nominal essence is being adduced as a sufficient, not as a necessary condition of propertyhood. Still, advocates of the innocuous reading may ask, is it not plausible that Locke means to convey the full equivalence?¹⁰

I will argue below that the semantically innocuous account of propertyhood leaves Locke's own concerns about expressibility unintelligible (Section II.3), results in commitment to an unlikely hypothesis about the genesis of the views he advances in the *Essay* (Section II.5), and deprives of all motivation his advocacy of pursuing 'natural history' in order to 'perfect' our ideas of substances (Section III). First, however, let me point to a grammatical feature of Locke's analysis whose compatibility with nominal-essence semantics will in any event require explanation. Recall that Locke doesn't introduce the notion of an imperfect idea *simpliciter*; it is an imperfect idea *of a sort of substance*, which by the addition of further qualities may be rendered a more perfect idea of the same sort of substance. Owing to the inclusion of different sets of simple ideas in the 'complex *Idea* of that Substance, wherein they all are join'd,' the result in turn of 'various Examination, Skill, or Observation of **that subject**,' different people will '*have different Essences of Gold*' (III.vi.31: 458-9). That Locke doesn't merely mean different ideas *signified by the same name* is even more evident from a subsequent formulation:

[M]en, though they propose to themselves the **very same Subject** to consider, yet frame very different *Ideas* about it; and so the Name **they use for it**, unavoidably comes to have, in several Men, very different significations. (III.ix.13: 482)

10 A second passage in Book IV might appear to support the innocuous reading by implying that whatever secondary qualities 'result from' the 'Constitution of the insensible parts' of a substance 'consequently must always *co-exist* with that complex *Idea* we have of it' (IV.iii.11: 545). Though the point can't be fully argued here, I believe this conclusion would be unwarranted. In section IV.vi.7, Locke retrospectively summarizes two 'Reasons mentioned, *Chap. 3*,' clearly corresponding to the theses of sections IV.iii.11 and 12. The wording of this summary strongly suggests that when Locke refers in IV.iii.11 to additional qualities resulting from the 'same Constitution of the insensible parts of *Gold*' on which the qualities in our nominal essence depend, he does not have in mind qualities resulting from gold's *real essence*. Rather, he is referring to those secondary qualities (should there be any) necessarily possessed by anything that shares *each of the various* real constitutions underlying the qualities in the nominal essence. The 'reason' knowledge of the necessary coexistence of qualities was found to be unattainable is not that we lack knowledge of real essences, but that 'we know not the real Constitutions of Substances, on which **each secondary Quality particularly** depends' (IV.vi.7: 582).

The same name may be used *for the same sort of substance* with two different significations.¹¹ Thus the possibility arises that complex ideas of substances possess a kind of 'ofness' not exhausted by the conformity of objects to their component simple ideas, and that names carry a 'forness' distinct from that determined by the nominal essences they 'signify.'

Admittedly, we do find a passage that can give the impression of retrospectively repudiating Locke's own talk of 'different *Ideas* of the same Substance' (III.ix.13: 483). Whereas the existence of various (more or less imperfect) ideas of gold figures in chapter III.ix as an inevitable 'imperfection' in our use of words, the subsequent chapter might seem to qualify the very admission of its possibility as an outright 'abuse' of words. '[I]n that [substance] called *Gold*,' Locke tells us,

one [man] puts into his complex *Idea*, what another leaves out; and *Vice Versâ*: yet Men do not usually think, that therefore the Species is changed.... He that adds to his complex *Idea* of *Gold*, that of Fixedness or Solubility in *Aqua Regia*, which he put not in it before, is not thought to have changed the Species; but only to have a more perfect *Idea*.... (III.x.19: 501)

According to his diagnosis, people are led to think like this '[b]ecause they secretly in their Minds refer that name, and suppose it annexed to a real immutable Essence of a thing existing, on which those Properties depend.' And this 'secret Supposition' (III.x.18: 500) counts as one of the chief abuses of words:

But this reference of the name to a thing, whereof we have not the *Idea*, is so far from helping at all, that it only serves the more to involve us in Difficulties. For by this tacit reference to the real Essence of that Species of Bodies, the Word *Gold* (...) comes to have no signification at all, being put for somewhat, whereof we have no *Idea* at all.... (III.x.19: 501; cf. II.xxxi.8: 380 and II.xxxii.18: 390)

Yet Locke can't be intending to repudiate his own sanction of various ideas of the same substance. The passage cited from III.ix was expressly placed *outside* the scope of the incriminated supposition that the significations of our substance-names 'agree to' the '*Real Constitution of Things*' (III.ix.12: 482). It directly follows a claim that it is the 'simple *Ideas* that

11 Context establishes the 'same subject' as a sort, rather than a particular. A directly prior mention of 'these simple *Ideas* that ... are united in the same Subject' refers back to 'these [simple ideas], as united in the several Sorts of Things.' Two sentence later, Locke supports his conclusion that people have 'different *Ideas* of the same Substance' by observing that 'the Properties of any sort of Bodies [are] not easy to be collected.' It is only in the next section that he raises the *additional* point that 'any particular thing existing' can be classified into various sorts.

are found to *co-exist in Substances*, . . . as united in the several Sorts of Things' that 'are the proper *Standards* to which their Names are referred, and by which their Significations may best be rectified' (III.ix.13: 482). Locke's point is that not even those who *reject* the useless supposition and properly set about adjusting their substance-ideas according to 'these *Archetypes*' are assured flawless communication: different individuals will end up with different ideas of the same sorts of substance. Indeed, the remark in parentheses I elided from the passage in III.x merely adds to this the reassurance that the word 'gold', 'by standing for a more or less perfect Collection of simple *Ideas*, serves to design that sort of Body well enough in civil Discourse.' The abuse Locke is objecting to, rather, is a particular *understanding* of what it is for two ideas associated with the name 'gold' to be more or less perfect ideas of the same sort of substance, namely the widespread secret supposition that what counts as gold is determined otherwise than by agreement with the nominal essence. In effect, Locke warns us not to interpret his talk of more or less perfect ideas of 'that sort of body' as an abandonment of nominal-essence semantics.

The semantically innocuous reading owed its designation to the ease with which it sustained nominal-essence semantics while at the same time offering an account of what makes an idea of gold imperfect. As we have now seen, there remains the additional task of explaining what makes the idea an idea *of gold*. Here not even the innocuous reading can avoid bringing to bear an extrinsic exegetical apparatus. Let me call one collection of sensible qualities *equivalent* to another provided every quality contained in the first enjoys a necessary connection with the conjunction of those contained in the second, and vice versa. Now I might try to uphold the innocuous reading by stipulating (for example) that one of Aristotle's ideas was an *idea of gold* provided it is equivalent to the idea I signify by 'gold', and that Aristotle used the name 'χρυσός' for gold provided the idea he signified by that name was an idea of gold. But there is compelling reason to doubt whether the semantically innocuous reconciliation of the imperfection thesis with nominal-essence semantics can be the right one. Surprisingly, the main problem is neither the need for the exegetical stretch just demonstrated nor the consequence that one can always only 'conjecture' whether another's distinct idea is one of gold, but rather the fact that the reconciliation is altogether *too comfortable!*

3. Concerns about expressibility

The evidence in question derives from places where we find Locke self-consciously struggling to express the imperfection thesis in a manner that *doesn't* conflict with his semantic framework. Consider the following attempt at explaining his already familiar claim that we are unable to distinguish substances into species according to 'perfect complex *Ideas* of the *Properties* of things, flowing from their different real Essences':

for being ignorant of the real Essence it self, it is impossible to know all those Properties, that flow from it, and are so annexed to it, that any one of them being away, we may certainly conclude, that that Essence is not there, and so the Thing is not of that *Species*. We can never know what are the precise number of Properties depending on the real Essence of *Gold*, any one of which failing, **the real Essence of Gold, and consequently Gold, would not be there**, unless we knew the real Essence of Gold it self, and by that determined that *Species*.

Sensing some kind of trouble, Locke adds a gloss:

By the word *Gold* here, I must be understood to design a particular piece of Matter; *v.g.* the last Guinea that was coin'd. For if it should stand here in its ordinary Signification for that complex *Idea*, which I, or any one else calls Gold; *i.e.* for the nominal Essence of Gold, it would be *Jargon: so hard it is, to shew the various meaning and imperfection of Words, when we have nothing else but Words to do it by.* (III.vi.19: 449)

Why would using the word 'gold' in its ordinary signification result in 'jargon'? Locke uses this term for the unintelligible and the nonsensical, such as a claim that there is unconscious thought (II.i.19: 115, II.xxxiii.18: 401). The absurdity he must have in mind ensues when he envisions the very possibility I have cited as a threat to nominal-essence semantics: the possibility that a thing might *conform* to the imperfect nominal essence signified by 'gold', yet fail to possess one of the unknown further 'Properties depending on the real Essence of *Gold*,' thus (he seems compelled to conclude) failing to be gold.¹² Such absurdity can be

12 I am indebted here to John Troyer, 'Locke on the Names of Substances,' *Locke Newsletter* 6 (1975) 27-39. Locke's qualification may have been motivated by the even clearer threat of 'jargon' in a precursor to the present passage. In Draft B of 1671, as in the *Essay*, he insists that a person's words 'can signifie noe more then ... is in his owne thoughts,' whence substance-names stand for our 'imperfect Ideas' and not those collections of simple ideas that 'perfectly destinguish' things of a species. He continues: 'Considering things as rankd into sorts by nature let us examin that which we may be supposed to know best of all & call man & we shall finde that ... it is far yet from being certainly determined what those qualitys or simple Ideas are ..., of which simple Ideas when any one or more is wanting, the thing wherein that want

avoided, Locke here suggests, if we 'shew the ... imperfection' of the nominal essence signified by the word 'gold' by contrasting it instead with the full set of properties flowing from the real essence of (the sort of substance composing) *the last-coined guinea*. For there is no contradiction in an object's having a right to the name 'gold' while failing to belong to that species.¹³

This passage is only one of Locke's sometimes tortuous attempts to talk of a discrepancy between the nominal essence of some particular sort of substance and the properties that are *really in* that sort, flowing from its real essence. As we saw earlier, he initially resorts to semantic ascent, trading in use of the word 'gold' for mere mention. Referring to our ordinary idea 'of that sort of Body we call *Gold*,' he pronounces it indubitable 'that this, call'd *Gold*, has infinite other Properties, not contained in that complex *Idea*' (II.xxxi.9-10: 382, also 381). Later in the *Essay*, perhaps sensing the apparent futility of such a maneuver,¹⁴ he seeks to identify the sort by specifying an individual either through a definite description or demonstratively. In view of the appeal we have already

is, is not of that kinde or ranke of creaturs, nor to be called man' (in John Locke, *Drafts for the Essay Concerning Human Understanding, and Other Philosophical Writings*, vol. 1, P.H. Nidditch and G.A.J. Rogers, eds. [Oxford: Clarendon Press 1990], §77-8: 184-5; see also Draft A, §2: 9-10). Locke seems unaware of the possible conflict (regarding the determination of which things are 'to be called man') between conformity to the nominal essence and membership in a species constituted 'by nature,' i.e. 'otherwise then in respect of the common name we have given it' (ibid.). Though I will argue that he develops a subtler theory of substantial kinds in the *Essay*, the potential for such 'jargon' persists.

- 13 The passage under discussion occurs as part of an enumeration of conditions whose obtaining would be 'necessary' for us to be able to 'distinguish substantial Beings into *Species*, according to the usual supposition, that there are certain precise *Essences* or *Forms* of Things, whereby all the Individuals existing, are, by Nature, distinguished into *Species*' (III.vi.14: 448). Hence advocates of the innocuous reading might dismiss Locke's complaint about how 'hard it is' to express the imperfection of nominal essences as merely drawing a *consequence* of that mistaken 'usual supposition' (cf. LaPorte, 'Locke's Semantics,' 50-5). However, it would be far-fetched not to regard the complaint as pronounced in *propria voce*. After all, it isn't the *expressive predicament* that Locke cites as a difficulty for his opponent. Rather, it is the *thesis he is trying to express* ('Our nominal Essences of Substances, not perfect Collections of Properties'), one whose obtaining is *not* predicated on his opponent's mistaken supposition.
- 14 The maneuver is futile as long as the semantic ascent appealed to is the familiar variety entailing the identity of *gold* with *the substance called 'gold'*. If I am right, though, Locke is best viewed as implicitly *trying* to employ the phrase 'the substance called "gold"' in a sense that won't license this 'disquotational' identity. In Section IV.2, I sketch an account of what that sense could be.

seen Locke make to the last-coined guinea, the following passage suggests the same approach:

[N]o one can shew a Reason, why ... the Word *Gold*, signifying **that sort of Body the Ring on his Finger is made of**, should determine **that sort**, rather by **its** Colour, Weight, and Fusibility; than by **its** Colour, Weight, and Solubility in *Aqua Regia*: Since the dissolving it by that Liquor, is as **inseparable from it**, as the Fusion by Fire.... [N]o one has Authority to determine the signification of the Word *Gold*, (**as referr'd to such a Body existing in Nature**) more to one Collection of *Ideas* to be found in that Body, than to another: Whereby the signification of that name must unavoidably be very uncertain. Since, as has been said, several People observe **several Properties in the same Substance**; and, I think, I may say no body all. (III.ix.17: 486)

In order for a quality to be acceptable for inclusion in a nominal essence that will 'determine' the sort in question, Locke here assumes, it must be 'inseparable from' that sort. This shows that the determination of sort by nominal essence can't be *constitutive*; Locke instead invokes a sort against which the candidate nominal essence is to be measured.¹⁵ There remains a question whether he takes this target sort — 'such a Body existing in Nature' — to have been picked out by definite description of the ring (as I propose, leaning on the analogy with the guinea passage), or rather by an implicitly presupposed *alternative* nominal essence (as the semantically innocuous theorist must less plausibly suppose).

Finally, there is the section on the 'Difficulty to treat of Words with Words,' in which Locke candidly admits that his semantic theory threatens to render some of what he wants to say about the signification of substance-names unsayable:

But I desire, it may be considered, how *difficult* it is, to lead another by Words into the Thoughts of Things, *stripp'd of those specifical differences* we give them: Which Things, if I name not, I say nothing; and if I do name them, I thereby rank them into some sort, or other, and suggest to the Mind the usual abstract *Idea* of that *Species*; **and so cross my purpose**. For to talk of a *Man*, and to lay by, at the same time, the ordinary signification of the Name *Man*, which is our complex *Idea*, usually annexed to it; and bid the Reader consider *Man*, as he is in himself, and as he is really distinguished from others, in his internal Constitution, or real Essence, that is by something, he knows not what, looks like trifling.... (III.vi.43: 465-6).

15 For further examples of Locke's nonconstitutive use of 'determine that Species', see III.xi.20: 519 and IV.xii.14: 648. The subject of the above passage must be the sort, not the particular ring; nothing is 'inseparable' from an individual considered as such, nor does it possess 'properties' (III.vi.6: 442).

The ensuing discussion reveals that the expressive problem once again pertains to the claim that substance-ideas are 'imperfect, and therefore various' (III.vi.48: 469 [summary]). For example, Locke wants to say that the nominal essence of man will always be inadequate to the nature of that sort of substance — to the nature of *man*. Unfortunately, this very use of the name 'man' (carrying its 'ordinary signification') prevents him from expressing a thought about the sort intended; to append the phrase 'as he is in himself' would be to engage at best in idle 'trifling' with words. Since it is so difficult to make the points he intends 'by known familiar Names,' Locke now announces that he will seek to do so by telling a story that avoids them. Recounting Adam's naming of modes and substances, he avoids *both use and mention* of 'familiar names' such as 'jealousy' and 'gold.' The substitution of Hebrew 'zahab' for English 'gold' in contexts of mention serves only to eliminate any possibility of use/mention confusion. The crucial substitution is that of 'this Matter' for 'gold' in *contexts of use*. Presented with a particular 'piece of Matter,' Adam forms an abstract idea of a few of the sensible qualities he notes in this object, an idea he chooses to signify by the name 'zahab.' Unsurprisingly, this nominal essence is amenable to further perfection:

[T]he inquisitive Mind of Man, not content with the Knowledge of these, as I may say, superficial Qualities, puts *Adam* upon farther Examination of this Matter. He therefore knocks it, and beats it with Flints ...: he finds it will bend without breaking. Is not now Ductility to be added to his former *Idea*, and make part of the Essence of the Species, the Name *Zahab* stands for? ... If [it is], then all the other **Properties, which any farther Trials shall discover in this Matter**, ought by the same Reason to make a part of the Ingredients of the complex *Idea*, which the Name *Zahab* stands for, and so be the Essence of the Species, marked by that Name. Which Properties, because they are endless, it is plain, that the *Idea* made after this fashion by this *Archetype*, will always be inadequate. (III.vi.47: 469)

Once again, we find Locke attempting to pick out a sort by specifying a particular. The failure of Adam's complex idea to contain all the 'properties' in 'this matter' is a failure to match an independently constituted sort, 'Properties belonging only to *Species*, and not to Individuals' (III.vi.6: 442). For that matter, how could a substance-idea's *inadequacy* lie in its very *generality*? That Locke is not complaining about generality is obvious from his epistemological conclusions: it is 'whilst our complex *Ideas* of the sorts of Substances' contain only an 'imperfect Collection' of their sensible qualities that knowledge of 'general Propositions' is held impossible, a predicament that would be *avoided* were we to possess 'specifick *Ideas* of their real Essences' (IV.vi.10: 584, IV.vi.11: 585).

4. An essentialist alternative

Where we have found Locke trying to *circumvent* the apparent bounds of his official theory of the names of substances, John Troyer views him as describing an *alternative* manner of using such names. Troyer goes so far as to credit Locke with an understanding of the reference of natural kind terms borrowed from Saul Kripke and Hilary Putnam: '[t]he extension of terms like "gold" is determined by the essential features of the kind of thing' causally-historically related to the term.¹⁶ This description is said to fit one use of substance-names Locke finds available; for misguided epistemological reasons, he instead advocates a use of substance-names in accord with nominal-essence semantics. Still, Troyer insists, he is 'committed to an ontology of real kinds and an account of names of substances which allows their use as names of these kinds,' on which they get a grip by courtesy of historically prior ostension.¹⁷ While maintaining that Locke deems such a use of substance-names *impossible* and not merely inadvisable, J.L. Mackie shares the view that Locke's 'doctrine of real essences that do not coincide with nominal essences is implicitly a doctrine of natural kinds.'¹⁸ Moreover, Mackie construes Locke as allowing that reference to these kinds *can* be secured by expressing actual demonstrative thoughts.¹⁹ To some extent he is right, for we have seen Locke resort to just such an identification of substantial kinds when engaged in the circumvention maneuver.

Nevertheless, nothing along these lines can reflect Locke's considered position, for he explicitly opposes any suggestion that particular pieces of matter are pre-sorted into 'real kinds' by nature alone. In his blunt assessment, 'to talk of specifick Differences in Nature, without reference to general *Ideas* and Names, is to talk unintelligibly' (III.vi.5: 441). In particular, this is the case even if the 'real kinds' are held to be distinguished not by Aristotelian differentiae but rather by differences in corpuscular constitution. Drawing an analogy of 'natural Things' to watches, Locke derides the believer in such kinds by issuing a challenge:

16 Troyer, 'Locke on the Names of Substances,' 28

17 *Ibid.*, 34

18 J.L. Mackie, *Problems from Locke* (Oxford: Clarendon Press 1976), 88. See also Hilary Kornblith's chapter on 'Locke and Natural Kinds' in *Inductive Inference and its Natural Ground: An Essay in Naturalistic Epistemology* (Cambridge, MA: MIT Press 1993), 24-5.

19 Mackie, *Problems*, 97

[W]hat is sufficient in the inward Contrivance, to make a new *Species*? There are some *Watches*, that are made with four Wheels, others with five: Is this a specifick difference to the Workman? Some have Strings and Physies, and others none; some have the Balance loose, and others regulated by a spiral Spring, and others by Hogs Bristles: Are any, or all of these enough to make a specifick difference to the Workman, that knows each of these, and several other different contrivances, in the internal Constitutions of *Watches*? (III.vi.39: 463)

Locke's point, aptly summarized by Michael Ayers, is that '[r]eality can supply resemblances, but resemblances do not constitute natural boundaries.'²⁰ In order for resemblances between objects to yield a nontrivial classification into kinds, the relevant *respects* of resemblance would need to be settled. Until it is explained how nature accomplishes this, it will remain unintelligible how even a complete understanding of the inner workings of substances could reveal anything about the natural boundaries of their kinds. Now philosophers such as Putnam typically *do* address this challenge to their theories of reference to natural kinds, for instance by presupposing that relations of relevant similarity are fixed by a speaker's or a community's interests.²¹ Indeed, I will ultimately argue that Locke himself espouses such a view: the class of available taxonomic schemes is severely constrained in that certain resemblances are rendered salient by norms regulating proper scientific inquiry. The point, however, is that those who have attributed to him a reliance on 'real kinds' owe an explanation of how this coheres with his rejection of specific differences in nature as unintelligible.²²

20 Ayers, *Locke*, 2: 68. See also §IV of Paul Guyer, 'Locke's Philosophy of Language,' in *The Cambridge Companion to Locke*, V. Chappell, ed. (Cambridge: Cambridge University Press 1994)

21 See e.g. 'The Meaning of "Meaning"', in *Mind, Language and Reality: Philosophical Papers, Volume 2* (Cambridge: Cambridge University Press 1975), 239.

22 Kornblith does address Locke's argument regarding specific differences in nature. But where Locke 'appears to be offering a conceptual argument' that specific differences are *unintelligible apart from our abstract ideas*, Kornblith seeks to reinterpret this as the 'empirical argument' that our *beliefs* about such differences can only be 'explained' by appeal to 'our own conceptual activity' (*Inductive Inference*, 45-7). Despite advancing this argument that the postulation of 'real kinds in nature' is explanatorily idle, Kornblith adds, Locke elsewhere embraces such kinds (16-17, 23-5). What Locke denies, on this reading, is that real kinds can serve to regulate taxonomic practice. By contrast, I will argue that to the extent that Locke *does* embrace mind-independent kinds, it is precisely in virtue of his explicit recognition of their regulatory role.

Worse yet, not even a metaphysically intelligible pruning of admissible sortings is likely to pick out, for each ostended individual substance, a unique sequence of *infima species* and higher genera that will furnish the names in our taxonomic hierarchy with suitable natural archetypes. This is the upshot of Locke's separate *empirical* argument against Scholastic classificatory essentialism: the encountered diversity of organisms and minerals exposes the *arbitrariness* of positing a 'certain number'²³ of real essences, subject to the resulting requirement that all members of a lowest species share 'exactly the same real internal Constitution,' i.e. exhibit 'no more but an accidental difference' between one another (III.x.20: 501, IV.iv.15: 570). For no matter how we try to impose this scheme on nature, we seem to find members of the same lowest species distinguished from each other by qualities we have no prior reason to regard as any more 'accidental' than those 'properties' held to distinguish them from members of other species (III.x.20: 501-2, III.vi.8: 443).²⁴ In effect, the role of Locke's zoological examples is to pose the following type of question: Even if we grant that 'Man' constitutes a natural kind, what reason do we have to rule out an *equally* natural kind further encompassing those 'Creatures in the World, that have shapes like ours, but are hairy, and want Language, and Reason,' or for that matter a narrower one that excludes those similarly shaped rational creatures 'where the Males have no Beards' (III.vi.22: 450)?

23 III.iii.17: 418, III.vi.14-18 [summary]: 448, IV.iv.13: 569; see also III.vi.27: 454, III.x.21: 502.

24 My account of Locke's reasoning owes much to Ayers (*Locke*, 2: 71-3); where I will depart from him is in stressing this argument's compatibility with a recognition of naturally privileged kinds. It is in terms of Locke's skepticism about the utility of an absolute accident/property distinction that we must understand two passages seemingly implying that *individuals* bear properties, contrary to Locke's express denial. 'If things were distinguished into *Species*, according to their real Essences,' Locke argues a mere page after that denial, 'it would be as impossible to find different Properties in any two individual Substances of the same *Species*, as it is to find different Properties in two Circles, or two equilateral Triangles' (III.vi.8: 443, also III.iii.17: 418). Considered in the context of the *reductio* he is offering, his intent should be clear. Supposing quantities of vitriol are found to 'betray Qualities so different from one another, as to frustrate the Expectation and Labour of very wary Chymists,' Locke sees no reason why the chemists may not recognize a narrower species possessing as a *property* one or more of the qualities at issue (to be regarded either as a subspecies of vitriol or perhaps as true vitriol). Were the extension of the name they use assumed to constitute a Scholastic *infima species*, this move would be arbitrarily precluded.

5. *Avoiding the dilemma*

It is time to survey the exegetical horizon in the wake of the critique I have offered of both conventionalist and essentialist readings. We have found discussions in the *Essay* suggesting that Locke holds our nominal essences answerable to independently constituted kinds, to which they conform only inadequately. Though we have yet to understand what this could mean, we ought to be wary of an overly selective application of Locke's own hermeneutical maxim '*Si non vis intellegi, debes negligi*' (III.ix.10: 481). For it would be hard to set aside these passages' anti-conventionalist tenor as a curious anomaly in an otherwise radically anti-essentialist line of argument: the two themes are too regularly interspersed and (as will emerge in Section IV.1) systematically intertwined.²⁵

The need for a reading that takes both themes into account appears all the more pressing in light of the evolution of Locke's thought. His thesis that our substance-ideas are imperfect collections of simple ideas is among the elements that remain most constant between the two drafts dating from 1671 and the *Essay* as published in 1689. (Ten years later, as we saw in my introduction, Locke inserted yet another such statement into the fourth edition.) In the drafts, though, this thesis is part and parcel of a doctrine according to which substances are 'made into different sorts by nature' and a substance-idea is imperfect precisely insofar as it fails to comprise all the properties that 'necessarily goe to make up any one species as made & destinguishd into ranks by nature' and 'constitute the specific difference of things considerd in their own nature.'²⁶ While this doctrine is pointedly *not* cashed out in terms of Scholastic substantial forms,²⁷ it retains features of the traditional account that aren't presup-

25 Two attempts at doing justice to Locke's anti-conventionalist strand without presupposing essentialist metaphysics are Bolton's reading discussed in note 3 and a reply by Ruth Mattern ('Locke on Natural Kinds as the "Workmanship of the Understanding"', *Locke Newsletter* 17 (1986) 45-92, esp. 68). Mattern offers a clear statement of the seeming tension in Locke, but I am not convinced that her proposed resolution adequately respects the anti-conventionalism.

26 Locke, *Drafts*, Draft B, §75: 183, §75: 181n, and §84: 191. See also n.12. Pauline Phemister points to the traditional nature of Draft B's discussion of natural kinds in 'Real Essences in Particular,' *Locke Newsletter* 21 (1990) 27-55, at 28-9. Passages like these may explain Locke's remark to Molyneux about the 'difficulty I often found my self under when I was writing of that subject [of species], where I was very apt to suppose distinct species I could talk of without names' (letter of 20. January 1693, #1592 in *The Correspondence of John Locke*, E.S. de Beer, ed. (Oxford: Clarendon 1976-), vol. 4: 626).

27 Locke, *Drafts*, Draft B, §72: 176-7

posed in the *Essay*, notably the assumption that particular substances come sorted by nature into unique lowest species, the 'smallest divisions of things' (whether or not a given language has names for them).²⁸ On the one hand, then, the semantically innocuous theorist is committed to the awkward hypothesis that Locke's 'imperfection' language, while frequently retained *verbatim*, undergoes a complete shift in meaning between the drafts and the *Essay*. (The even less attractive alternative for those who attribute to Locke an abhorrence of natural kinds would be to regard the *Essay*'s imperfection thesis as an incongruous holdover from his earlier thought.) On the other hand, essentialist readings like Troyer's fail to take into account the *Essay*'s evident departure from the view of natural kinds endorsed in the drafts. The challenge is thus to devise a reading by the lights of which Locke retains enough of a belief in independently constituted kinds to underwrite his thesis of imperfection (understood as relative to such kinds), while coming to question the received assumptions concerning the natural basis of taxonomy.

As could be expected, the key to such a solution will be a certain weakening of the sense of 'independently constituted.' To discover just what independence of our nominal essences the envisaged sorting enjoys, we must examine Locke's proposal for how these nominal essences are to be emended. Their beholdenness to a 'standard made by nature' is reflected in science's standing obligation to perfect them:

For our Names of Substances being not put barely for our *Ideas*, but being made use of ultimately to represent Things ..., their signification must agree with the Truth of Things, as well as with Men's *Ideas*. And therefore with Substances, we are not always to rest in the ordinary complex *Idea*, commonly received as the signification of that Word, but must go a little farther, and **enquire into the Nature and Properties of the Things themselves, and thereby perfect, as much as we can, our *Ideas* of their distinct Species**; or else learn them from such as are used to that sort of Things; and are experienced in them. For since 'tis intended their Names should stand for such Collections of simple *Ideas*, as do really exist in Things themselves ... **therefore to define their Names right, natural History is to be enquired into; and their Properties are, with care and examination, to be found out.** (III.xi.24: 520-1)

I hope to elucidate what Locke means by the 'Properties of the Things themselves' by identifying the empirical procedure by which these properties are to be 'found out,' and asking what benefit could accrue to the human understanding from following this procedure. For present purposes, a rather crude characterization of the procedure will suffice (a more determinate reading must await an answer to the second question).

28 *Ibid.*, §91: 198

Locke enjoins us to improve our substance-ideas by collecting those simple ideas ‘which are constantly and inseparably united in Nature, and are always to be found together in the same Subject’ (III.vi.30: 457). This, of course, is also the content of the injunction cited in my introduction. Let us first inquire what readings that *reject* independently constituted kinds (henceforth ‘metaphysically innocuous’ readings) might have to offer regarding the question of what is gained when we thus ‘perfect’ our ideas of the sorts of substances. It will turn out that while the aims these readings may appeal to are indeed important to Locke, they must be subordinate to the pursuit of conformity to independently constituted sorts.

III The Uses of Natural History

1. Reducing arbitrariness

Why is it an *inadequacy* for the idea of a sort of substance to fail to contain all the discoverable properties of that sort? The same circumstance constitutes no inadequacy in ideas of modes: our idea of a triangle is not rendered inadequate by its failure to include all properties of that geometric figure (II.xxxi.10: 382). The difference is that the properties of a triangle at least ‘depend on’ or ‘flow from’ our idea of a triangle, whereas the properties of gold do not even *depend on* the qualities in our complex idea of gold — but rather ‘on that unknown real Essence, on which these also depend’ (IV.xii.9: 644). Locke puts this point by saying that in the species of ‘*natural Substances*’ nominal and real essence are not identical, while these essences coincide in the species of modes and sensible qualities (III.iv.3: 421, III.iii.18: 418-9, III.v.14: 436-7).²⁹

29 See Bolton, ‘Substances, Substrata, and Names,’ 500-1, 503-5. In restricting his claim to the species of ‘natural’ substances, Locke acknowledges that the nominal and real essences of a sort of artifact can coincide, e.g. in the mind of the artificer (see III.vi.40: 464-5). The fact that a sort’s possession of its properties rests on a foundation other than the combination of qualities in its nominal essence may not actually suffice to establish a divergence between nominal and real essences. For this, Locke also seems to require that we *intend* to hold the nominal essence responsible to something it only ‘inadequately’ represents (either the foundation itself or an unknown number of properties flowing from it). In the case of modes, neither of these two conditions is satisfied: ‘all the properties of the *Species*’ depend on the nominal essence, whence there is *nothing else* we ‘would have express’d’ by the name (III.v.14: 436). Secondary qualities *might* present a case in which the first condition for divergent essences is satisfied (cf. Mackie, *Problems*, 90), but here the second condition clearly is not (II.xxxi.12: 383).

Recall that on one metaphysically innocuous reading, the semantically innocuous one, all properties of gold are *necessary concomitants* of the conjunction of the qualities contained in the nominal essence. This need not imply that they 'depend' after all on the nominal essence: the dependence Locke has in mind is an *explanatory* one. On the semantically innocuous reading the properties of gold, while necessarily attendant on the conjunction of the qualities in the nominal essence, are not explained by them. Rather, these qualities as well as all remaining properties are explained by the underlying real constitution shared by all and only the things conforming to the nominal essence. Such considerations indeed suffice to make sense of a counterfactual situation Locke describes in which, surprisingly, the real and nominal essences of a geometric *mode* are said to fall apart:

[A]ll our complex Ideas of Substances are imperfect and inadequate. Which would be so also in mathematical Figures, if we were to have our complex Ideas of them, only by collecting their Properties, in reference to other Figures. How uncertain, and imperfect, would our Ideas be **of an Ellipsis**, if we had no other Idea of it, but some few of its Properties? Whereas having in our plain Idea, the whole Essence of that Figure, we from thence discover those Properties, and demonstratively **see how they flow**, and are inseparable from it. (II.xxxi.11: 382)

Here it does seem plausible that the hypothesized imperfect idea of an *ellipse* is presumed to pick out, necessarily and demonstrably, the very same geometrical objects as does the actual 'Essence of that Figure.' If so, the general circumstance Locke would be describing is one familiar in mathematical practice: one definition is often regarded as more appropriate than another deductively equivalent one, on the grounds that the latter is articulated in terms of a set of features lacking explanatory pride of place.³⁰ More specifically, Locke may be alluding to a long-standing debate over which (if any) classical geometrical demonstrations proceed in a manner satisfying the explanatory rigors of Aristotelian science, namely by deriving properties from the essences on which they depend.³¹

30 See e.g. Philip Kitcher, 'Explanatory Unification and the Causal Structure of the World,' in P. Kitcher and W. Salmon, eds., *Scientific Explanation* (Minneapolis: University of Minnesota Press 1989), 424-5.

31 See Paolo Mancosu, *Philosophy of Mathematics and Mathematical Practice in the Seventeenth Century* (New York: Oxford University Press 1996), ch. 1. While the above analysis of Locke's example accords with the semantically innocuous reading, the same analysis is consistent with its rejection. Leibniz, for instance, invokes naturally privileged ('physical') species whose boundaries are imperfectly approximated by

Still, it remains questionable whether considerations of explanatory virtue alone can underwrite a satisfactory analysis of the imperfection of substance-ideas. For we must also render intelligible Locke's injunction to *perfect* these ideas by incorporating ever more of the substances' properties, in light of his insistence that doing so contributes nothing to the ideas' explanatory potential (II.xxxi.13: 383). A proponent of the semantically innocuous reading might now offer the following reply: in perfecting our nominal essences, we reduce the *arbitrariness* involved in their composition. Assuming, for example, that malleableness necessarily accompanies a certain yellow color and fusibility, there is no reason why the color and fusibility should be singled out for inclusion in the nominal essence signified by 'gold', rather than all three qualities, or any other combination of qualities necessarily picking out the same objects as the original nominal essence. The only *non-arbitrary* nominal essence would be the explanatory real essence itself; as we are however ignorant of this, the least arbitrary decision we can make is the egalitarian one to incorporate *each* new property of the substance as it is discovered.

This analysis would account for much of what Locke says about imperfect collections of properties. Certainly, he emphasizes time and again that they suffer from arbitrariness:

[Men] make their specifick *Ideas* of the sorts of Substances, for the most part, of a few of those simple *Ideas* which are to be found in them: But these having no original precedency, or right to be put in, and make the specifick *Idea*, more than others that are left out, 'tis plain, that ... *our Ideas of Substances* are deficient, and *inadequate*. (II.xxxi.8: 381; see also III.vi.31: 458, III.ix.13: 482, and the passages from III.ix.17: 486 and II.vi.47: 469 cited in Section II.3)

Nonetheless, the norm of minimizing arbitrariness fails by itself to supply a rationale for following Locke's perfection procedure. The first thing to note is that by the lights of the semantically innocuous reading, there is no reason to believe that the progressive inclusion of empirically

our 'provisional' nominal definitions (*New Essays*, 312, 325, 400ff). Nonetheless, he presents a nearly identical example, explaining that one can define the parabola in terms of an 'external feature' and subsequently devise a 'more perfect idea' by adding a further such property, all the while unaware of 'the figure's inner essence' that serves as a 'key to further knowledge' of its properties (346, 402) and explains why they obtain (cf. 295). Given his use of this example as an objection to Locke's characterization of the substance/mode distinction, it is ironic that Leibniz fails to recognize Locke's own use of the same example to concede the *contingency* of the fact that our modal ideas serve as archetypes and as such 'cannot but be *adequate Ideas*' (II.xxxi.3: 376). Cf. Roger Woolhouse, 'Locke's Theory of Knowledge,' in *The Cambridge Companion*, 160.

coexisting qualities into our nominal essences will *reduce* the arbitrariness of which properties have been included. A permanent decrease in arbitrariness would only ensue if there came a stage after which we would invariably identify the additional properties of the sort *correctly*. Otherwise our evolving nominal essence won't remain answerable to the same 'perfect collection' of properties, and there can be no meaningful comparison of the arbitrarinesses involved in two nominal essences answerable to distinct archetypes (as Locke insists, there will in both cases be an 'endless' number of arbitrarily omitted properties). But which further sensible qualities necessarily accompany those in a nominal essence is something concerning which we can at best conjecture, moreover with seemingly irremediable unreliability, as is witnessed by the 'sad Experience' often made by Locke's 'very wary Chymists' who 'seek for the same Qualities in one parcel of Sulphur, Antimony, or Vitriol, which they have found in others' (III.vi.8: 443). Hence, *if reduced arbitrariness of property-inclusion were the basic aim of idea-perfection through natural history*, the semantically innocuous account of propertyhood would render that procedure pointless. Yet the only motive for viewing reduction of arbitrariness as the basic aim of idea-perfection appears to be the semantically innocuous reading itself, which requires that the standards for idea-revision be fixed by the contents of the ideas themselves. It follows that reduced arbitrariness cannot by itself account for the desirability of following Locke's procedure. (On the other hand, should this procedure turn out to ensure that our nominal essences approach *independently* constituted 'perfect collections' of properties, their approach to such standards would naturally qualify as a decrease in the arbitrariness of the list of included sensible qualities.)

2. Remedying confusion

So far, we have been viewing Locke's procedure for perfecting a substance-idea as in a strict sense a procedure for *discovering* the properties of the respective sort of substance. What its properties *are* has been taken to be a matter settled *independently* of the results of this procedure, determined either by what qualities necessarily follow from those in our nominal essence (on the semantically innocuous reading) or by what qualities characterize a sort provided by nature (on the essentialist reading). What if we were to give up this assumption? Could it be that the revision process itself is *constitutive* of propertyhood, so that whatever qualities come to be included in the nominal essence to which I annex the name 'gold' are *ipso facto* properties of that substance? In carrying out the procedure Locke describes we are, of course, closely constrained by our experience of what qualities have hitherto been

constantly coinstantiated. Yet there always remains a degree of arbitrariness: just which such qualities get combined in a particular nominal essence '*depends upon the various Care, Industry, or Fancy of him that makes it*' (III.vi.29: 456); another investigator might have '*made other Trials*' (III.ix.13: 483). Since our successive trials for coinstantiation of new qualities will be performed on an ever-expanding set of objects, even the order in which they are performed may affect what qualities end up in the nominal essence.

This brand of reading carries the attraction of being metaphysically innocuous, yet promising an understanding of Locke's insistence that our nominal essence of a substantial sort never includes all the properties of that sort. Indeed, I will eventually conclude that the most charitable reconstruction of Locke's revision process *does* construe it as constitutive of propertyhood. (To be precise: though Locke never acknowledges that a substance's set of properties may always depend on contingencies of future inquiry, he does appear to conceive of the revision process as one *guaranteed* to yield only genuine properties.) Still, a crucial element is missing. According to the reading as it has been described, *some sortings are better than others* merely by virtue of their having been further refined in conformity with Locke's empirical procedure. But why should the procedure be accorded such standing? One possible answer would be that following Locke's procedure yields sortings that are preferable to their predecessors on *general pragmatic grounds*. This is the rationale Ayers sees as underlying Locke's taxonomic proposals (though he does not advocate the understanding of 'properties' under consideration):

Crudely, the particular complex perceptible things in existence ... constitute a vast plurality of machines among which there may be natural structural resemblances, but no two of which, for all we know, are precisely alike. How we should rank them on the basis of our observational knowledge is a matter to be more or less pragmatically determined. We should do so in a way which marks differences that are important to us and which at the same time fits our language for the purposes of communication.³²

Now Ayers's first pragmatic consideration, that of marking 'differences that are important to us,' will be irrelevant to the present question in the absence of an explanation of *why* this general aim should motivate the collecting of constantly conjoined qualities in substances, an activity it *doesn't* motivate in the case of modes. More promising is Ayers' second consideration, namely that Locke proposes a 'method for raising language above the confusions of its "civil" use, so as to give it scientific or

³² Ayers, *Locke*, 2: 67

“philosophical” precision and consistency.’ According to Ayers, it is ultimately for the sake of the ‘avoidance of confusion’ that we who are engaged in the natural sciences should ‘improve and remodel our definitions in the light of experience.’³³

It is true that Locke describes the ‘*doubtfulness and uncertainty of their signification*’ as the ‘imperfection’ to which our use of words is subject (III.ix.4: 477), since it interferes with their communicative purpose. (Such uncertainty is one of the circumstances in which Locke says we may speak of ‘confused’ ideas — cf. II.xxix.9: 366.) Moreover, careful observation of correlated qualities might indeed help me meld, out of the disparate criteria by which I find myself recognizing gold on different occasions, a precise set of criteria acceptable to me and worth promoting to interlocutors.

Again, one may wonder how Ayers can *account for* the fact that matters are different in the case of modes. But there is a more immediate difficulty: it remains mysterious how this desideratum could motivate the progressive accumulation of additional properties mandated by Locke’s program of idea-perfection.³⁴ Locke is well aware that the obligation of those engaged in ‘philosophical discourse’ to perfect their substance-ideas is itself one of the main *causes* of confusion, and thus can’t simply be motivated as its remedy. Listing several circumstances conducive to uncertainty about the precise signification of words, he includes both the case where there is ‘no settled Standard, any where in Nature existing, to rectify and adjust [their signification] by’ and the case where ‘the signification of the Word is referred to a Standard, which Standard is not easy to be known’ (III.ix.5: 477). *Lack of beholderness to an external standard is conducive to disagreement as to the signification of the names of modes* (III.ix.7-10: 478-81). The absence of this circumstance ensures that substance-names are less prone to confusion, at least in their everyday ‘civil’ use:

Because in Substances, (especially those, which the common and unborrowed Names of any Language are applied to,) some remarkable sensible qualities, serving ordinarily to distinguish one sort from another, easily preserve those, who take any

33 Ayers, *Locke*, 2: 75; see also Guyer, ‘Locke’s Philosophy of Language,’ 143. For Locke’s distinction between ‘civil’ and ‘philosophical Discourse,’ see III.ix.3: 476 and III.ix.15: 484.

34 Ayers never claims it does: it isn’t clear he sees *any connection* between Locke’s advocacy of natural history and his thesis that our substance-ideas are ‘imperfect and inadequate’ (see esp. *Locke*, 2: 76).

Care in the use of their Words, from applying them to sorts of Substances, to which they do not belong. (II.xxxii.10: 387; see also III.ix.15: 484)

In the case of substance-names in ‘philosophical’ use, however, there is a ‘contrary reason’ for concern: the reason such names are said to be ‘of a very unsteady and various meaning’ is that the ideas they signify are properly ‘referred to Standards without us, *that ... can be known but imperfectly and uncertainly*’ (III.ix.11: 481-2). Once science embarks on the Lockean program of perfecting substance-ideas based on empirical trials, their very beholdenness to a standard in nature turns into a fertile source of confusion: ‘that confusion, which comes from several Persons, applying the same Name to a Collection of a smaller, or greater number of sensible Qualities, proportionably as they have been more or less acquainted with, or accurate in examining the Qualities of any sort of things’ (III.xi.25: 522). The reason Locke’s ‘very learned and ingenious Physicians’ disagree on what would count as ‘liquor’ (III.ix.16: 484-5) is surely that between themselves they have uncovered a *variety* of constant concomitances, in accordance with which each has framed his complex idea somewhat differently. Of course, Locke urges ‘Men, versed in physical Enquiries’ to *remedy* this confusion through greater care in coordinating nominal essences (III.xi.25: 521). But their responsibility to perfect substance-ideas on the basis of empirical regularities needs to be motivated in the first place.

3. *Converging on a real essence*

I have been seeking to bolster the hypothesis that Locke’s taxonomic methodology furthers the conformity of ideas to a ‘standard made by nature’ in a sense stronger than metaphysically innocuous readings will stomach. Yet, given Locke’s anti-essentialism, failure to meet this standard can’t be taken as lack of match with a particular ostensibly identifiable ‘real kind.’ Instead, I will argue, the imperfection of our substance-ideas reflects their failure to match *any* of a privileged class of kinds, namely those that are characterized by shared structure at the level that is explanatory of sensible qualities. This solution rejects the prevalent view of the relation between substantial sorts’ real and nominal essences, which holds that each nominal essence corresponds to an explanatory real essence that picks out exactly the same particulars. Consider how Ayers introduces Locke’s distinction:

He held that what sets a boundary to the class is always what he calls the “nominal essence,” i.e. the abstract idea that embodies our criteria for the application of the kind-name or “sortal” ... Those aspects of the structure of the individual members of a species [so defined] *which they have in common and in virtue of which they possess*

the defining properties of the species, comprise what Locke called the "real essence" of the species.³⁵

Locke himself characterizes the relation between the nominal and real essences of substances as follows:

[I] call [the abstract idea of a sort] by a peculiar name, the *nominal Essence*, to distinguish it from that real Constitution of Substances, upon which depends this *nominal Essence*, **and all the Properties of that Sort**; which therefore, as has been said, may be called the *real Essence*: v.g. the *nominal Essence* of Gold, is that complex *Idea* the word *Gold* stands for, let it be, for instance, a body yellow, of a certain weight, malleable, fusible, and fixed. But the *real Essence* is the constitution of the insensible parts of that Body, on which those Qualities **and all the other Properties of Gold** depend. (III.vi.2: 439)

Unless we presuppose the semantically innocuous reading, there is no assurance here that the real essence is a constitution all things conforming to the nominal essence must share: rather, it is shared by the things possessing *all* the properties of the substance, including those *not* contained in the imperfect nominal essence (and which things conforming to that abstract idea *might lack*).

For Locke, the existence of a real essence underlying most (experienced) instantiations of the nominal essence appears to be the conclusion of an *inference to a common cause* of those qualities united in the nominal essence. What the prevalent view doesn't sufficiently stress is the nature of the premise he demands for such an inference. It is not enough that we have occasionally found certain qualities conjoined;³⁶

35 Ayers, *Locke*, 2: 67-8 (my italics), 38, 70; see also Phemister, 'Real Essences,' 35-6, 45-6; Peter Alexander, *Ideas, Qualities and Corpuscles: Locke and Boyle on the External World* (Cambridge: Cambridge University Press 1984), chapter 13, esp. 273; R.S. Woolhouse, *Locke's Philosophy of Science and Knowledge* (New York: Barnes & Noble 1971), 118-19.

36 Ayers does note this qualification: 'In general there is the implicit suggestion that repeated observation of coexisting qualities and powers is requisite to justify the presumption of a recurrent underlying cause of their union, and so to justify the formation of a complex idea' (*Locke*, 2: 79-80). See also Woolhouse, who makes the further claim that *correlations* are at issue (*Locke's Philosophy of Science*, 117-18, 132). In neither case does the restriction constitute a general abandonment of the traditional picture: neither author connects the *failure* of a nominal essence to be determined by a real essence with its 'imperfection' or 'inadequacy,' a defect both appear to account for via the semantically innocuous reading (Woolhouse, *Locke's Philosophy of Science*, 120; Ayers, *Locke*, 1: 102, 2: 76). I know of only one reader of the *Essay* who has both recognized the role of correlations and suggested a connection between microstructural uniformity and 'adequacy': Richard Boyd, 'Realism, Anti-

what is required for the inference is their *constant* coexistence: 'The complex *Ideas* we have of Substances, are ... certain Collections of simple *Ideas*, that have been observed or supposed constantly to exist together' (II.xxxi.6: 379, II.xxxii.18: 390-1). Again, 'Men, observing certain Qualities always join'd and existing together, therein copied Nature; and of *Ideas* so united, made their complex ones of Substances' (III.vi.28: 456). It is these correlations, I submit, that license the inference to a common underlying constitution:

[W]e come to have the *Ideas of particular sorts of Substances*, by collecting such Combinations of simple *Ideas*, as are by Experience and Observation of Men's Senses taken notice of to exist together, and are **therefore** supposed to flow from that particular internal Constitution, or unknown Essence of that Substance. (II.xxiii.3: 296)

Though the requirement that the qualities have 'constantly' or 'usually' been found together is not expressly stated here, it figures three times in the immediate vicinity (II.xxiii.1: 295, II.xxiii.4: 297, II.xxiii.6: 298).

What would it be for shining yellow color, a particular density, and fusibility to have been observed 'always join'd and existing together'? Clearly, it will suffice that all coinstantiations of two of these qualities have been found invariably accompanied by the third: all objects of that color and density have been found fusible, all fusible objects of that density have been found to possess that color, etc.³⁷ These mutual correlations should already make it reasonable to assume that the objects typically share a common structure at the explanatory — for Locke, the microscopic — level of description, one that accounts for their correlated qualities. (For the moment, let us ignore the possible existence of *multiple* such generally shared structures, a complication Locke will be found to show no sign of appreciating.) Still, there will likely be instantiations, both actual and merely possible, that lack this structure. Each such case will surely be distinguishable from the former samples by failure to exhibit some further quality, say solubility in *aqua regia*. As we include ever more of these correlated qualities in our nominal essence, the idea

Foundationalism, and the Enthusiasm for Natural Kinds,' *Philosophical Studies* 61 (1991) 127-48, at 130-3.

37 Compare the slightly weaker condition in Draft B: An Englishman's 'complex Idea of a Swan is a kinde of affirmation that where such a kinde of shape colour bignesse with such a necke & legs doth exist there also whole feet are joynd with them or such a kinde of voice as that of a swan is. i.e. where a great number of those simple Ideas doe exist togeather that the rest are also' (Locke, *Drafts*, Draft B, §63: 166-7; see also Draft A, §1: 4-5).

is that the nominal essence will come ever closer to picking out some particular explanatory constitution.³⁸ Locke characterizes the real essence whose existence we 'suppose' as 'that real constitution of any Thing, which is the foundation of all those Properties, that are combined in, and are constantly found to co-exist with the *nominal Essence*' (III.vi.6: 442). In view of his requirement that properties be *added* to a sort's nominal essence as they are 'found out,' I suggest we construe this formulation as alluding to the output of an indefinitely iterable procedure for revising a nominal essence by searching for additional constantly coexisting qualities. The substance's real essence can then be specified as the explanatory-level constitution picking out exactly those objects that conform to the nominal essence in the procedure's limit as the nominal essence approaches a 'perfect Collection of [the substance's] Properties' (III.vi.19-20: 449 [summary]), a collection containing 'all the simple *Ideas*, that are united in Nature' (II.xxxii.18: 391, III.vi.30: 457).

Locke's appeal to common cause inference readily accounts for why modal ideas, unlike those of substances, carry with them no commitment to the existence of a microstructural real essence. Our substance-ideas are the ones we compile and revise on the basis of experienced constant conjunctions of sensible qualities, themselves held to result from the structures things possess at a distinct corpuscular level of description. This practice underwrites a commitment to the existence of a microstructural common cause of these component qualities, one that is responsible for most instances of their coinstantiation. By contrast, ideas of modes are not held responsible to experienced constant conjunctions of sensible qualities, whence they give rise to no such commitment.³⁹ Recognizing

38 Mackie allows that Locke 'hints vaguely at this sort of progress' (*Problems*, 98n), and Kornblith sketches a similar account of Locke's implicit understanding of 'chemical method' (*Inductive Inference*, 26-8), one he says 'flatly contradicts' Locke's 'official position' that 'real kinds' can exercise no constraint on taxonomic practice (17). Besides my denial that Locke espouses that position, the main discrepancy between our readings lies in Kornblith's insistence, based on a failure to distinguish Locke's 'properties' from 'qualities,' that *any difference in qualities* implies two things can't be members of the same 'real kind' (26-8, 36-7). This may explain his attribution to Locke of the view that '[w]ere we in a position to observe [corpuscular structure], we would see directly how it is that nature divides the world into kinds' (17).

39 I don't wish to imply that the characterization of substance-ideas as those intended to represent kinds with causally explanatory real essences fully accounts for Locke's substance/mode distinction. Following Woolhouse and others, I suspect the distinction involves a separate and potentially orthogonal ontological strand (*Locke's Philosophy of Science*, chs. 4 and 7; Mackie, *Problems*, 99-100; Ayers, *Locke*, 2: ch. 8). Whether and how each of these strands is associated with the idea of 'substance in general' are vexed questions beyond this paper's scope.

the supposition of an underlying real essence as the upshot of a common cause inference should also provide the key to understanding Locke's repeated claim that the substantial sort's real essence not only explains a member's *possession* of each of the sensible qualities contained in the nominal essence, but can additionally explain how these are 'united together in the same Subject' (IV.vi.15: 590; also III.vi.6: 442, III.ix.12: 482). At issue, the present account suggests, is an implicitly presupposed distinction between a microstructure that is a genuinely *common* cause of the conjoined qualities and a mere *conjunction* of their respective microstructural causes.

While the essentials of how I propose to reconstruct Locke's procedure for revising nominal essences should already be clear, it may help to make the details explicit. Let us call an unordered n -tuple of qualities C a 'candidate'⁴⁰ provided each $(n - 1)$ -tuple subset C' of C is such that all hitherto observed coinstantiations of all members of C' have been found to feature the remaining quality in C as well. At each stage of revision, a newly perfected substance-idea is required to be composed of a collection of simple ideas corresponding to a candidate, as well as the further idea of 'Substance in general' (II.xxiii.3: 296). Locke enjoins us to perfect each substance-idea based on a collection S of qualities according to the following rule: should we discover a quality $q \notin S$ such that the union $S \cup \{q\}$ is a candidate, we must base our emended substance-idea on this candidate.

Actually, there remains a complication. Let G be any candidate for the idea signified by 'gold,' K the set of features defining a cube, and P the set of features defining a regular polyhedron whose surface area is six times the square of its edge length (I am assuming that neither K nor P is itself a candidate). According to the definition given above, the union $G \cup K \cup P$ is a candidate: each of this set's members has been found constantly conjoined with the conjunction of the remaining ones. But do we want to recognize *golden cube* as a privileged kind? As a matter of fact, Locke expressly rules it out, his ground presumably being the unavailability (predictable based on experience of similar substances) of a common cause inference, i.e. the fact that the set $G \cup K$ is no candidate:

40 I have adapted this term, as well as the idea of a semantic 'revision procedure,' from Anil Gupta's writings on truth.

Whoever first light on a parcel of that sort of Substance, we denote by the word *Gold*, could not rationally take the Bulk and Figure he observed in that lump, to depend on its real Essence, or internal Constitution. Therefore those never went into his *Idea* of that Species of Body.... (II.xxxi.9: 381).

To exclude the nominal essence $G \cup K \cup P$ and like cases, Locke might have imposed the following restriction. Each candidate C must contain at least one quality q such that if coinstantiations of the qualities in any subset S of $C - \{q\}$ have always been found to be accompanied by q , then they have also always been found to be accompanied by every *other* member of $C - S$.

Though probably still too simplistic,⁴¹ the preceding explication of how our substance-ideas are to be perfected can roughly accommodate all but one of Locke's discussions of the possible careers of the signification of 'gold.' Unsurprisingly, the exception is the parable of Adam with its aberrant essentialist presuppositions (which I have argued should be read as a misguided evasive maneuver provoked by the threat Locke's semantics poses to the expressibility of his imperfection thesis). My explication accords particularly closely with Locke's claim that the mind commits a 'mistake' when

having joined the *Ideas* of substance, yellow, malleable, most heavy, and fusible, it takes that complex *Idea* to be the complete *Idea* of Gold, when yet its peculiar fixedness and solubility in *Aqua Regia* are as **inseparable from those other *Ideas*, or Qualities of that Body, as they are from one another.** (II.xxxii.23: 392; cf. also III.vi.31: 458, III.ix.13: 483, III.ix.17: 485-6, III.v.19: 501, and IV.xii.9: 645)

It is evidently the availability of an expanded candidate that shows the nominal essence in question to be incomplete and in need of revision.⁴²

Although he doesn't believe we can ever in fact achieve a 'perfect discovery of all those Qualities [of natural things], which would best shew us their most material differences and agreements' (III.vi.30: 458), Locke's revision procedure is designed to bring our taxonomy of substances into increasing accordance with a standard of materiality. Locke nowhere defends his view that the resulting classifications deserve to count as 'material' (also III.vi.29: 456), but one implicit incentive for following his injunction should be apparent: as a nominal essence is

41 In particular, I see little reason why Locke wouldn't allow the expansion of nominal essence by a number of qualities simultaneously, should no single quality be discoverable.

42 Locke gives a more detailed explanation of the 'mistake & error' *Drafts*, in Draft B, §93i: 205-6 (cf. also III.vi.29: 456).

perfected, we can expect additional empirical generalizations of increasing accuracy (in view of the unlikelihood that the underlying real essence is disposed to manifest itself phenomenally in only the ways we have happened to compile in our nominal essence). Hence perfecting a given conception of what counts as a 'like' body should boost the reliability with which we are able 'by Analogy to guess what Effects the like Bodies are, upon other tryals, like to produce' (IV.iii.29: 560). This is presumably why 'a Man accustomed to rational and regular Experiments shall be able to see farther into the Nature of Bodies, and guess righter at their yet unknown Properties, than one, that is a Stranger to them' (IV.xii.10: 645; cf. III.vi.24: 452). And it is surely that benefit that earns the perfection of substance-ideas and accordingly of 'experimental Knowledge' (IV.iii.29: 560, IV.vi.7: 582) its prominent place on Locke's list of '*ways to enlarge our Knowledge, as far as we are capable*' (IV.xii.14: 648).⁴³

IV Lockean Natural Kinds

1. Prefixed bounds

It is a dogma of the dominant view that the role of Locke's microstructural real essences — by contrast with the dual role of Aristotelian essences — is explanatory and not also classificatory.⁴⁴ Now it is true Locke holds that our sorting would be no less arbitrary if, *per impossibile*, it could be based directly on differences in corpuscular constitution. If the present reading is right, however, what has been neglected is the *interrelation* of corpuscular and phenomenal levels. Phenomenal classifications need not be congruent to corpuscular ones: nominal essences generally fail to pick out a class of things possessing a common corpuscular structure. (Nor, presumably, will every such structure give rise to a collection of sensible qualities.) Nonetheless, the more 'perfect' or 'complete' we render a nominal essence, the closer Locke believes we approach some sort for which there exists an underlying real essence explanatory of the appearances defining it. And our interest in such sorts (based at least partially on an interest in inductive robustness) is

43 The present reading thus lends support to Boyd's conjecture that Locke's solution to the 'problem of the "inadequacy" of kinds of substances' is intended to apply to the 'problem of inductive categories' as well ('Enthusiasm for Natural Kinds,' 131-2).

44 See e.g. Ayers, *Locke*, 2: 67-8; Guyer, 'Locke's Philosophy of Language,' 131; Woolhouse, *Locke's Philosophy of Science*, 101.

what justifies holding certain of our complex ideas accountable to such a norm of completeness. In short, the explanatory role of real essences affords them a classificatory role as well: we have reason to prefer classifications on the basis of how close they come to congruence with real essences.

There is thus something right after all about intuitions that Locke's theory of substances concerns natural kinds. But while Locke agrees that there is a privileged sorting to which our nominal essences must answer, this sorting is not entirely independent of the human understanding. To start with, which internal constitutions are available as the targets of Lockean revision to our nominal essences clearly depends on what simple ideas we are fitted to receive. In Locke's view, the substances in our environment do not in any *absolute* sense 'naturally sort themselves out into separate species or natural kinds' (as Mackie suggests he should have conceded⁴⁵), but they do sort themselves into such kinds relative to our particular sensory faculties. Most importantly, the fact that they do so is itself a reflection of the interest we take in sorts determined by internal constitutions. As we are about to be reminded, however, these general considerations don't exhaust the understanding's involvement in determining the natural standards to which particular taxonomic names are 'referred.'

In forming nominal essences, Locke claims, there is a moment of constraint and a moment of arbitrariness: 'Those [names] of *Substances*, are not perfectly [arbitrary]; but *referr to a pattern, though with some latitude*' (III.iv.17: 428, also III.vi.28: 455). The latitude lies primarily in the abundance of available targets. The constraint by patterns in nature lies in the fact that there is such a thing as being *off* target, and in the existence of a methodology for gradually cottoning on to one. Viewed in this light, I will now argue, Locke's otherwise noncommittal-sounding reflections on the existence of 'prefixed bounds' can be seen to issue from an elaborate two-part line of reasoning that extends throughout III.vi.29-33. The argument's conclusion is stated twice in close proximity:

[We] have reason to conclude, that though the nominal Essences of Substances, are all supposed to be copied from Nature; yet they are all, or most of them, very imperfect ... and therefore, that **these Boundaries of Species, are as Men, and not as Nature makes them, if at least there are in Nature any such prefixed Bounds...** [T]he sorting of Things by us, or the making of determinate *Species*, being in order to naming and comprehending them under general terms, **I cannot see how it can be properly said, that Nature sets the Boundaries of the Species of Things: or if it**

45 Mackie, *Problems*, 87

be so, our Boundaries of *Species*, are not exactly conformable to those in Nature. For we, having need of general names for present use, stay not for a perfect discovery of all those Qualities, which would best shew us their most material differences and agreements.... (III.vi.30: 457-8)

As Ayers notes, Locke 'seems explicitly to have made the concession that natural boundaries might exist.' The question then arises whether this is the 'concession of a genuine possibility' at odds with Locke's preferred position, or rather (as Ayers argues) merely a concession 'for the sake of argument.'⁴⁶ In fact, however, matters are more puzzling. Notice how Locke justifies his two claims that *if there are natural boundaries, our nominal essences don't match them*. In both cases, he does so by reiterating, *outside* the scope of any hypothetical assumption of natural boundaries, the conclusion of the standard argument he has just rehearsed: our nominal essences must be 'very imperfect' since it is impossible to discover 'all those [simple ideas], which are united in Nature' (III.vi.30: 457; the argument is repeated in III.vi.31). As we have seen, such imperfection is *indeed* a failure to match a naturally privileged kind.⁴⁷ In the context of this manner of justifying the above conditional, how can Locke consistently profess skepticism about natural boundaries?

The same puzzle is posed by Locke's subsequent expression of frustration that his words get in his way when he tries to 'speak of the supposed real Essences and *Species* of Things, as thought to be made by Nature, if it be but only to make it understood that there is no such thing signified by the general Names, which Substances are called by' (III.vi.43: 466). Once again, Locke seems to be suggesting that nature *doesn't* actually draw the boundaries it is 'thought' to, but that *even if it did*, the significations of our general names wouldn't match them. And once again he proceeds to show (by way of the tale of Adam) that in forming a substance-idea we in fact *do* have a 'Standard made by Nature,' the problem being that our idea 'will be always inadequate' by this standard (III.vi.46-7: 468-9). How can Locke twice defend his conditional claim using an argument that works only by *presupposing* the very

46 Ayers, *Locke*, 2: 71

47 Ayers rejects any such reading (*Locke*, 2: 76), whence it is unclear how he thinks the imperfection of our substance-ideas could even be *relevant* to Locke's claim that our species-boundaries wouldn't match supposed natural ones. I suspect the reason Ayers doesn't notice this difficulty lies in his neglecting to distinguish between the 'imperfection' of substance-*ideas* at issue here (their 'inadequacy' or failure to perfectly represent their archetypes) and the 'imperfection' of substance-*names* (the uncertainty of their signification).

antecedent toward which he simultaneously expresses a skeptical attitude?

The answer is that contrary to what we first assumed, the clause starting 'if it be so' doesn't play the role of a genuine conditional. Locke is distinguishing *two senses* in which nature could be 'said' to set the boundaries of species. In one sense of this expression nature *does* establish boundaries, he tells us, while in a more exacting sense it does not. The role of the phrase 'if it be so' is to invoke the weaker of these two senses; at the same time, Locke indicates his *own* preference for using the expression 'boundary set by nature' to signify the more exacting notion. Each of the senses of 'natural boundary' corresponds to a different way in which our substance-ideas can and will be 'imperfect.' Notice that Locke justifies his reluctance to speak of 'boundaries in nature' by pointing out that our sortal names are intended to function as 'general terms.' Elaborating further in III.vi.32, he stresses that substance-ideas are 'designedly imperfect' by virtue of their very generality, since '[t]he more general our Ideas are, the more incomplete and partial they are.' Such imperfection is said to be 'visible at first sight' in the case of the higher genera (III.vi.32: 459 [incl. summary]). But if my idea of *metal* is held to be more incomplete and imperfect than my idea of *gold*, the operative sense of perfection or completeness is clearly not a *normative* one: the former idea isn't any more 'inadequate.' Indeed, the imperfection of nominal essences in this sense is '*adjusted to the true end of Speech*' (III.vi.33: 460), by permitting the communication of thoughts of suitable generality. There remains of course the separate normative sense of perfection: the sense in which the idea of a sort of substance is compiled 'by some [men] more, and others less accurately' (III.vi.31: 458), and in which our ideas of *gold* and possibly also of *metal* are in constant need of further perfection through pursuit of natural history (if they are to serve as the significations of substance-names used in 'philosophical discourse').⁴⁸

48 It may appear that Locke is not contrasting two imperfections that are always present, but rather our normatively imperfect ideas of the 'lowest *Species*' with our designedly imperfect ideas of the 'more comprehensive *Classes*' (III.vi.32: 459). Clearly, Locke doesn't restrict *designed* imperfection to higher genera: just as the 'the *Genus*, or more comprehensive, is but a partial Conception of what is in the *Species*,' so also the '*Species* [is] but a partial *Idea* of what is to be found in each individual' (460). But might he not countenance a privileged category of 'specific' nominal essences, conceived as the only ones to which the *normative* notion is applicable, perhaps those intended to represent naturally lowest species? (This is Leibniz's view of definition in the *New Essays*, 401-2.) The passage I am about to display confirms the conclusions of Section II.4 in denying 'just Authority' to our privileging of any

The two types of imperfection are juxtaposed even more directly in the perfectly parallel argument of III.ix.11-14. First, Locke describes the familiar normative imperfection deriving from constraint by a 'Standard in Nature,' given the fact that 'the Properties of any sort of Bodies [are] not easy to be collected, and completely known by the ways of enquiry, which our Faculties are capable of' (III.ix.13: 483). Next, starting a new section, he adduces the *additional* non-normative imperfection deriving from the availability of ideas of many different degrees of generality:

Besides, there is scarce any particular thing existing, which, in some of its simple *Ideas*, does not communicate with a greater, and in others with a less number of particular Beings: Who shall determine in this Case, which are those that are to make up the precise Collection, that is to be signified by the specifick Name; or can with any just Authority prescribe, which obvious or common Qualities are to be left out; or which more secret, or more particular are to be put into the signification of the name of any Substance? (III.ix.14: 483)

'All *which* together,' he concludes with unmistakable reference to the two types of imperfection, 'seldom or never fail to *produce* that various and *doubtful Signification in the names of Substances*, which causes such Uncertainty, Disputes, or Mistakes, when we come to a Philosophical Use of them' (III.ix.14: 484).

Locke's distinction points to a simple resolution of the puzzle posed above: the normative imperfection of our substance-ideas reflects the *sense in which nature could be said to determine the boundaries of species*, while their non-normative imperfection helps account for the equally important *sense in which it does not*. What remains unclear is whether Locke would allow that even when his prescription for perfecting a given nominal essence is assiduously followed, exactly *which* natural kind the procedure will converge on may depend on contingent features of the future course of inquiry. (For example, timely encounter of a platypus could prevent investigators whose initial nominal essence comprised lactation and hirsuteness from cottoning on to a kind encompassing only *viviparous* mammals.) Most likely his appreciation of the availability of target kinds of varying generality extends only to the context of the intra- and interpersonal *regimentation* of 'confused' nominal essences. I find no evidence that Locke recognizes the 'latitude' in question as infecting the

level of generality: Locke's 'specific' ideas are distinguished only relative to a stage of inquiry. If Locke *does* mean to restrict his inadequacy thesis to just these substance-ideas, it would have to be for a pragmatic reason, e.g., to ensure that idea-perfection preserves our current hierarchy's subsumption-relations.

further moment of linguistic reform that consists in the empirically guided *perfection* of determinate substance-ideas.⁴⁹

2. *The names of substances*

Interpreted as I have been proposing, can Locke *avoid* having his words 'cross [his] purpose' (III.vi.43: 465)? Less cryptically, is his embrace of a qualified mind-independence of substantial kinds compatible with his nominal-essence semantics? The difficulty lies in making room for the locutions exemplified in the following two claims, to which I have argued Locke acknowledges commitment:

- (1) A piece of metal conforming to the nominal essence of gold could fail to display all the properties of gold, in which case it would lack the real essence of gold.
- (2) Two different complex ideas, moreover ones that pick out distinct sets of conforming things, may both be ideas of gold.

I believe that such a reconciliation can be achieved, and that the resulting view of taxonomic names incorporates important aspects of Locke's outlook. It would of course be disingenuous to advertise it as 'Locke's theory of natural kind terms': we must bear in mind that Locke's two most explicit attempts at overcoming the inexpressibility problem tacitly presuppose metaphysics directly at odds with the *Essay's* anti-essentialism.

What is needed is an interpretation of the expression 'the real essence of gold,' in view of Locke's observation that taking this essence to be a constitution shared by everything that is gold renders 'jargon' of claim (1). In a moment of palpable frustration, Locke himself proposes an unsatisfactory alternative: the real essence of gold is the underlying constitution shared by just those things that belong to the sort of substance of which the last-coined guinea is composed. I now suggest we adapt instead Locke's device of semantic ascent (from II.xxxi.9-10) and gloss 'the real essence of gold' as 'the underlying constitution shared by just those things that belong to the sort for which I use the name "gold."' In turn, as above, let us identify that sort of substance with whatever natural kind the collection of qualities signified by 'gold' will cotton on

⁴⁹ Moreover, it may not be easy to correct this 'oversight.' The presumption that Locke's revision procedure *will* converge on some natural kind would stand in need of justification, and may conflict with belief in the plenitude of such kinds.

to in the limit of my practice of inquiry. Clearly, something may conform to my nominal essence while lacking the underlying structure constitutive of this natural kind. Regarding claim (2), let us imagine for the sake of an example that the complex idea Robert Boyle signified by the name 'gold' allows some parcels of matter to pass muster that do not conform to the idea John Locke signified by that name. Locke would nonetheless have referred to Boyle's idea as an 'idea of gold.' According to the Lockean theory I wish to sketch, he would have been correct on the assumption that their ideas are caught up in respective practices of inquiry that will cotton on to the same natural kind, a circumstance also expressible by saying that they used their respective names for the same sort of substance. (If we recognize a *multiplicity* of available targets for idea-perfection governed by Locke's revision procedure, we will be allowing the very identity of that sort to depend on the course of post-Lockean chemical inquiry.)

On this oddly bifurcated view of mental content, substance-ideas carry a world-directedness distinct from that determined by what it takes to conform to them: they are additionally sorted according to what kinds they are *ideas of*. The semantic consequences will be readily apparent. Despite using the word 'gold' for gold, John Locke might have asserted a *truth* in predicating that word of something that was actually *not* gold (similarly, it is possible for me to truly predicate a substance-name of an object that falls outside the sort for which I use that name). Thus the theory supplies a way of talking about what people *use their words for* that carries no consequences for the *truth* of what they say. The bulk of the present paper has been devoted to establishing that Locke *does* deliberately deploy a truth-independent 'of'-locution in his discussion of substance-ideas. But what *point* could there be to introducing such a locution?

We first need to remind ourselves that considerations of *better and worse translation* remain operative even in those cases of Lockean 'modes' where we will readily *agree* that no normative consequences should be drawn concerning either the translated utterances or the notions they employ. Locke provides an excellent example:

[T]he Latin Names *Hora, Pes, Libra*, are, without difficulty, rendred by the English names, *Hour, Foot, and Pound*: But yet there is nothing more evident, than that the *Ideas* a *Roman* annexed to these Latin Names, were very far different from those which an *English-man* expresses by those English ones. And if either of these should make use of the measures that those of the other Language design'd by their Names, he would be quite out in his account. (III.v.8: 433)

By pointing out that a Roman astronomer's notion of *an hour* differs from ours, we avoid the need to criticize him as 'out in his account.' While the opponent of moral relativism may reject this approach in the case of

many of Locke's 'mixed' modes such as justice, the example of 'Church' (III.ix.9: 480) will likely provoke the Lockean reaction. Granted, then, that there can be a legitimate role for a normatively inert representational locution, why would Locke see fit to employ it in the case of *natural kinds*, where whiggish assessment of the claims of our predecessors has seemed so appealing? Locke relies on general idea-theoretic grounds when he insists that the truth of his ordinary predications of the name 'gold' be determined by an object's possession of the collected qualities he associates with that name, grounds deriving from the epistemic conditions he places on how an idea can pick out the things that conform to it.⁵⁰ At the same time, though, his representational locutions are designed to accommodate the very externalistic pressures that lead his opponents then and now to reject nominal-essence semantics. In particular, Locke *does* hold that ideas can be 'of' substances in a far stronger sense than they can be 'of' modes. In the case of substantial sorts, we have seen, 'ofness' is no longer normatively inert — its primary normative implications pertain not to the *truth* of assertions and beliefs involving substance-ideas but rather to what would count as appropriate *revision* of our nominal essences. (Such considerations will even be reflected in 'of'-ascriptions to those 'civil' users of substance-names who only loosely and implicitly hold their classification accountable to nature, as they will enter into our determination of how such speakers' names are best to be 'rendered.')

Assuming I am a Lockean investigator, furthermore, which substance my idea is an idea of will determine the truth of claims I can make using semantic ascent (interpreted in the manner proposed). This makes available to Locke a legitimate *secondary use of the substance-names themselves*, one that is straightforwardly parasitic on their 'ordinary signification' (recall III.vi.19: 449, III.vi.43: 465). Provided the quality of fixedness is no 'part of the definition of the word *Gold*,' Locke interprets someone posing the question *whether gold is fixed* as asking whether 'all *Gold*, *i.e.* all that has the real Essence of *Gold*, is fixed' (III.vi.50: 470, III.x.17: 499). Suppose now that this person belongs to the enlightened class of 'Enquirers, (not Disputers)' who have 'acknowledged themselves to have but imperfect *Ideas*' of the species their inquiry concerns (III.xi.7: 511). Why not in turn understand his question whether all that has the real essence of gold is fixed as asking *whether the substance for which he uses the name 'gold' is*

50 See Martha Brandt Bolton, 'The Relevance of Locke's Theory of Ideas to his Doctrine of Nominal Essence and Anti-Essentialist Semantic Theory' (1992), reprinted in *Locke*, V. Chappell, ed. (Oxford: Oxford University Press 1998), 214-25.

fixed?⁵¹ Of course, a definitively affirmative answer could only be provided through (empirically guided) *revision* to the nominal essence. But isn't this feature of a secondary use of substance-names precisely what Locke has in mind when he describes the semantically self-conscious 'Enquirers' as to '[w]hether a *Bat* be a *Bird*' as engaged in a 'real Enquiry, concerning the Nature of a *Bird*, or a *Bat*,' where the goal of such inquiry is 'to make their yet imperfect *Ideas* of it more complete' through empirical examination?

Admittedly, Locke can appear unwilling to sanction *any* use of substance-names on which their extensions are sorts characterized by real essences. But his detailed critique of this 'abuse' (discussed in Section II.2) arises in a context where the speaker is assumed to be oblivious to Locke's own account of the mediating role of nominal essences, instead falsely presupposing '[t]hat there are certain precise Essences, according to which Nature makes all particular Things, and by which they are distinguished into *Species*' (III.x.21: 502). By contrast, Locke would have no reason to disallow the above-described secondary use of 'gold' as referring to '*what has the real Essence of Gold*' (III.x.17: 499), one that *no longer* rests on the 'secret Supposition' of an ultimately unintelligible mode of responsiveness to real essences (III.x.18: 500). What he *argues* is that any attempt to make one's word 'stand for' the real essence of gold, of which we have no idea, will leave this word with 'no signification at all' (III.x.19: 501; see also III.ii.2: 405-6). But this complaint should not apply to the secondary use of 'gold,' a use in which this word *does* stand for an idea possessed by the speaker. While Locke has reason not to grant us ideas of substantial forms — he confesses that he doesn't understand *what it is* for something to be in this sense the real essence of gold (II.xxxi.6: 380, III.vi.10: 445) — he can't consistently deny that we possess ideas of Lockean real essences, indirectly specified via nominal essences. In the relevant sense, we do possess an idea of the real essence of gold — how else could Locke refer to it?⁵²

51 This identification may appear to fly in the face of Locke's *contrast* between the claim that '*what has the real Essence of Gold is malleable*' and the mere claim that '*what I call Gold is malleable*' (III.x.17: 499). The latter, however, is *not* intended by Locke as an exploitation of semantic ascent. Parallel passages reveal it to be the claim that malleableness 'is part of the Definition, part of the nominal Essence the Word *Gold* stands for' (III.vi.50: 470, IV.viii.5: 612-3, IV.vi.9: 583).

52 Cf. Bolton, 'Substances, Substrata, and Names,' 509.

V Conclusion

Aiming to exhibit a 'certain slackness' in Putnam's mechanism of natural-kind term reference, Keith Donnellan and Mark Wilson have independently described a number of scenarios in which any determinate attribution of a predicate's extension on the basis of a doctrine of natural kinds would appear tantamount to an unwarranted prediction of the future history of the community that uses it.⁵³ On my reading of Locke on substantial kinds, this line of criticism is remarkably reminiscent of Locke's contention that the beholdenness of substance-names' significations to natural standards involves 'some latitude' due to the availability of multiple target kinds. (As we have seen, it isn't clear to what extent he allows that this slackness may persist once we have departed 'civil' discourse for the more regimented 'philosophical' discourse of natural science. Recall also that the slackness he has in mind lies not in a term's *extension* but only in the archetype to which it is 'referred.') Even Wilson's emphasis on contingencies surrounding a community's introduction to new phenomena calls to mind a scenario Locke uses to challenge the semantic utility of a conception of species into which 'Things existing are distinguished by Nature.' Reporting that water and ice are in fact held to be 'two distinct Species of things,' he poses a rhetorical question:

But if an *English-man*, bred in *Jamaica*, who, perhaps, had never seen nor heard of *Ice*, coming into *England* in the Winter, find, the Water he put in his Bason at night, in a great part frozen in the morning; and not knowing any name it had, should call it harden'd Water; I ask, Whether this would be a new *Species* to him, different from Water? And, I think, it would be answered here, It would not to him be a new *Species*, no more than congealed Gelly, when it is cold, is a distinct *Species*, from the same Gelly fluid and warm.... (III.vi.13: 447-8)

Locke's polemical point, I take it, is that it would be absurd to look to a theory of words' directedness at natural kinds in the hope of convicting this individual of *error* when in these circumstances he comes to regard ice as *the same kind of substance* he has always called 'water.' Nothing about his prior (no doubt 'confused') use of the word is likely to settle that it should be regarded as any more directed at the natural kind *liquid water* than at the equally natural kind *water*. Locke's response to an objection that water in Jamaica and ice in England have *different internal constitutions* would be his familiar query as to 'what difference in the

53 Donnellan, 'Kripke and Putnam on Natural Kinds,' in *Knowledge and Mind*, C. Ginet and S. Shoemaker, eds. (Oxford: Oxford University Press 1983), 102; Wilson, 'Predicate Meets Property,' *Philosophical Review* 91 (1982) 549-89, *passim*.

internal real Constitution makes a specific difference' (III.vi.22: 451; see also III.vi.39: 463).⁵⁴ In much the same fashion, Wilson and Donnellan argue that unless a predicate's extension is allowed to depend on contingencies in its users' subsequent history (which they feel would be intolerable⁵⁵), Putnam-style theories of reference are liable to issue analogously unwarranted error verdicts concerning whole language communities.

But while Locke thus prefigures recent critiques of the appeal to natural kinds in semantics, he doesn't share the skepticism these critiques may reinforce about the very idea of a natural kind. Conceding to the philosophers he criticizes that the practice of interpreting our ancestors as meaning by 'gold' and 'water' what we do now is itself unobjectionable, Wilson warns that 'this selection should not be canonized into a mythology of "natural kinds"' that are 'somehow prominent or privileged in nature.'⁵⁶ In his view, *natural kind* is an indefensible notion dreamt up by philosophers in a misguided attempt at metaphysically justifying the 'convenient' practice of anachronistic translation. This accords quite closely with one of Locke's own hypotheses about the origin of the Scholastic notion of species: it was invented in order to 'avoid' a situation in which 'Men must suppose the same word to signify different Things in different Men,' a supposition it was recognized 'would very much cumber the use of Language' (III.vi.48-9: 469-70). Nevertheless, I would like to conclude by suggesting that Locke's account of perfect ideas of substances gestures in the general direction of a response to Wilson's skepticism.⁵⁷ By looking to a norm governing

54 Would Locke abjure criticism if the Jamaican instead started calling ice 'glass'? Here the response 'But ice and glass have *different internal constitutions!*' would have greater bite: it isn't clear there *exists* a Lockean natural kind toward which the man's word might be interpreted as pointing. Interestingly, Locke's example traces to the early drafts, where he uses it to strikingly different effect: he illustrates people's liability to 'mistake the meaning of words by their unacquaintedness with the things themselves' by imagining a Jamaican who *mistakenly* calls frozen water 'glasse or chrystall or stone' (Locke, *Drafts*, Draft A, §2: 9, Draft B, §84: 192)! If Locke's positive aim in III.vi.13 were to explain that the proper assignment of meanings is *unconstrained* by the natural kinds of things, there would have been no need to change the example — in fact, the revised scenario would be highly tendentious.

55 Donnellan, 'Kripke and Putnam,' 103-4; Wilson, 'Predicate Meets Property,' 553. For a bullet-biting defense of a 'diachronic division of linguistic labor,' cf. Henry Jackman, 'We Live Forwards but Understand Backwards: Linguistic Practices and Future Behavior,' *Pacific Philosophical Quarterly* 80 (1999) 157-77.

56 Wilson, 'Predicate Meets Property,' 582, 578

57 Responses of a similar shape have not been uncommon in the philosophical litera-

scientific inquiry, Locke seeks to regain a metaphysically unproblematic notion of natural kind, albeit one whose abundant exemplification renders it unavailable for the coreference-guaranteeing task he views as one of the traditional notion's *raison d'être*.⁵⁸

ture since Locke. One current proponent points to 'a line of thought that runs from Kant through Peirce to recent writers such as Sellars and Putnam' (Philip Kitcher, *The Advancement of Science: Science without Legends, Objectivity without Illusions* (New York: Oxford University Press 1993), 171-3).

58 I have profited from discussions with and comments by Joseph L. Camp and Elizabeth L. Jockusch, as well as from suggestions by anonymous referees. An ancestor of this paper was written while I was supported under a National Science Foundation Graduate Fellowship.