GENERIC STATEMENTS AND ANTIREALISM

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ABSTRACT: The standard arguments for antirealism are densely abstract, often enigmatic, and thus unpersuasive. The ubiquity and irreducibility of what linguists call generic statements provides a clear argument from a specific and readily understandable case. We think and talk about the world as necessarily subject to generalization. But the chief vehicles of generalization are generic statements, typically of the form "Fs are G," not universal statements, typically of the form "All Fs are G." Universal statements themselves are usually intended and understood as though they were only generic. Even if there are universal facts, as Russell held, there are no generic facts. There is no genericity in the world as it is "in-itself." There is genericity in it only as it is "for-us."

KEYWORDS: Generic, General, Antirealism

I shall take general statements to include those that logicians call universal, typically of the form "All Fs are G," and particular, of the form "Some Fs are G," but also those that linguists call generic, typically of the form "Fs are G." The term 'realism' will be used for the metaphysical view that reality, the 'world,' is mind-independent, in particular, independent of our knowledge of it. 'Antirealism' will stand for the opposite view, including Kant's transcendental idealism as well as recent positions such as Michael Dummett's 'antirealism,' Nelson Goodman's 'irrealism,' and Hilary Putnam's 'internal realism.' According to antirealism, reality depends, insofar as it is known or knowable, on our ways of knowing it, our cognitive capacities – sense perception, introspection, intellectual intuition, imagination, memory, recognition, conceptualization, inductive and deductive reasoning, use of language and other symbolism. Cognition is the employment of the cognitive capacities. It leads to knowledge when successful, but to error when unsuccessful. So understood, antirealism allows for the possibility of an unknowable reality (Kant's 'things-in-themselves'), which is independent of our cognitive capacities, even if, as Goodman claimed, it is "not worth fighting for or against."[1]

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[1] Nelson Goodman, *Ways of Worldmaking* (Indianapolis: Hackett, 1978), 6.

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Antirealism should not be confused with skepticism, though in some respects they are similar. Antirealism is a metaphysical view, skepticism is epistemological. The skeptic questions our ability to know what there is. The antirealist claims that even if we did know what there is, it might not be as we know it. This is why antirealism seems paradoxical, while skepticism seems only outrageous.[2]

Realism and antirealism are seldom unqualified. Asserting and denying the reality of something are not the only options: according to Russell, some things do not exist but they do subsist, and according to Wittgenstein some things cannot be 'said' but they 'show' themselves. Also, one can be a realist regarding "things" but antirealist regarding 'facts.' And one can be a realist regarding the spatiotemporal/ physical structure of reality but antirealist, 'logical antirealist,' regarding its logical structure.[3]

Spatiotemporal/physical structures and even individual things may, of course, be impossible without logical structure, but whether this is so goes beyond the realism/antirealism issue. It belongs in the philosophy of space and time and in general ontology. Logical antirealism does not deny the independent reality of spatiotemporal/physical structures or of things, it denies only the reality of 'logical objects.' This is why it is more plausible than ordinary, say, Kant's or Goodman's, antirealism. It may have the same metaphysical bite, but, if it does, it does so indirectly and in a principled fashion.

I argue in Section 1 that generic statements are ubiquitous, that universal statements intended as universal are rare, and that this suggests a clear and eloquent argument for antirealism regarding the world, though perhaps not regarding things. In Section 2, I argue that realism regarding the world presupposes the category of fact, in the robust Russellian sense, that there are no generic facts in this sense even if there are universal and particular facts, and thus that the ubiquity of generic statements supports antirealism regarding the world. In Section 3, I argue that generic statements are not reducible to other kinds of statement.

1. The Arguments for Antirealism

The standard arguments for the chief thesis of Kant's transcendental idealism and contemporary antirealism have been densely abstract, often enigmatic, and thus

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[2] Panayot Butchvarov, *Skepticism about the External World* (New York: Oxford University Press, 1998), especially Chapter Six.

[3] Panayot Butchvarov, "Metaphysical Realism and Logical Nonrealism," in *Blackwell Guide to Metaphysics*, ed. Richard Gale (Oxford: Blackwell, 2002).

seldom persuasive. Perhaps, as Kant argued, we can know only things as they are 'for us,' not as they are 'in themselves,' but his premise – that for knowledge to be possible, the objects of knowledge must conform to knowledge, rather than knowledge to its objects – is hardly less obscure or more plausible than his conclusion. Perhaps, as Michael Dummett argued two centuries later, a realist interpretation of a sentence requires understanding what would be its conclusive verification and its conclusive falsification, and that such understanding is possible in the case of few if any sentences. But this would be comprehensible only to a few professional philosophers, and even they seldom find it clear or persuasive. Hilary Putnam argued for one of his versions of antirealism by saying that it "does not require us to find mysterious and supersensible objects *behind* our language games that we actually play when language is working."[4] But even if there are objects behind our language games (whatever this might mean), they need not be supersensible, and supersensible objects need not be mysterious (love and hatred are familiar but, especially as dispositions, they are not objects of the senses). A clear and plausible defense of antirealism, I suggest, must bypass the standard arguments. It must start afresh, from specific and readily understandable cases, not abstract and vague philosophical assumptions.

The standard argument for antirealism, in both the Kantian and its more recent versions, may be sketched as follows: (1) We cognize only what we have the capacity to cognize. This is a tautology. Therefore, (2) there is no reality, no world, that is independent of our cognitive capacities. Of course, (2) does not follow from (1). What may follow is another tautology: that (3) we cannot cognize reality independently of our cognitive capacities. Contemporary antirealists often argue on the basis of (1) for (2), not (3), probably because the negation of (2), namely, Kant's view that (4) there is a reality, 'things-in-themselves,' that is independent of our cognitive capacities, seems to them idle. But there is at least one very good reason for (4), namely, that (2) implies an absurd sort of cosmic humanism, perhaps human creationism, namely, the proposition, presumably held by no one, that the whole world – from the page you are reading now to the outermost galaxies, and from the Big Bang to the most distant future – depends for its existence and nature on certain members of one of its planets' fauna. Because of its forbidding level of abstraction, the standard argument leaves unclear both what it claims and what motivates it.

Arguments for antirealism from specific and readily understandable cases are different. They have the following form: (1) We cognize (perceive, understand, describe) the world as necessarily having a certain uncontroversial and familiar specific feature. But it is obvious that (2) the world does not, perhaps cannot, have

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[4] Hilary Putnam, *Ethics without Ontology* (Cambridge: Harvard University Press, 2004), 21-22.

that feature. Therefore, (3) the world as we cognize it, as it is "for us," is not as it is "in itself."

The major defenders of antirealism, from Kant to Goodman and Putnam, did offer also arguments of this second sort. In defense of his rather obscure thesis of the ideality of space, Kant pointed out that we can imagine only one space, and that we can imagine it as empty but not as absent. Regarding the ideality of time, he noted that all objects of sense, outer and inner, are necessarily in time, and that time is necessarily one-dimensional. Regarding the ideality of causality, Kant argued that we necessarily conceive of the objects of sense perception as causally related but we do not perceive causal relations. Goodman dazzled his readers with examples of features of the world that are best understood as "made" by us, not as how they are in themselves but as how we perceive, conceive, or represent them in language or in art.[5] We see the sun rising in the east, moving overhead, and then setting in the west, but if educated we know that it is we, not the sun, that is moving. The "fairness" of samples is a sacrosanct requirement both in science and business, but there are no objective criteria for it. We see the world as radically different, at least briefly, after we watch some films or read some novels. We conclude at time t that all emeralds are green because we have observed only green emeralds, but the same observations support also the conclusion that all emeralds are grue, if "grue" applies to all things observed before t just in case they are green, and to other things just in case they are blue. We reach the former conclusion because 'green,' not 'grue,' is 'entrenched' in our linguistic practice. Putnam pointed out that we can count the objects in a room (a lamp, a table, a chair, a ballpoint pen, and notebook) and come up with the answer 'five,' but that if we also count their mereological sums and ignore the null object then we come up with the answer '31.'[6]

Such examples were often the most persuasive arguments for these philosophers' antirealism.

The argument for antirealism from the ubiquity of generic statements is of this second sort. We think and talk about the world as including facts that are the object of the cognitive activity of generalization, and generic statements are our chief vehicles of generalization. But, obviously, there are no generic facts in the world, even if there are universal and particular facts.

Antoine Arnauld found the statement "Dutchmen are good sailors" puzzling.[7] It does not say that all Dutchmen are good sailors. Some are not. But neither does it

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[5] Goodman, *Worldmaking*, especially chapters I and V.

[6] Hilary Putnam, *Words and Life*, ed. James Conant (Cambridge: Cambridge University Press, 1995), 308.

[7] Antoine Arnauld and Pierre Nicole, *Logic or the Art of Thinking*, trans. Jill Vance Buroker (Cambridge: Cambridge University Press, 1996), 116.

just say that some are. Some Germans also are good sailors, but perhaps Germans are not good sailors. What, then, does the statement say? We may be uncertain whether Dutchmen are good sailors, but let us suppose it was common knowledge among those whose judgment mattered when Arnauld wrote, presumably 17th century shipmasters. We therefore also suppose that the statement was true. But if a fact is the sort of brute extralinguistic entity that according to Russell makes a statement true and Wittgenstein had in mind when he declared in *Tractatus Logico-Philosophicus* that the world is the totality of facts, not of things, "Dutchmen are good sailors" corresponded to no such entity, for there was not such an entity in the world.

Perhaps there was a fact to which the particular statement "Some Dutchmen are good sailors" corresponded. Perhaps there would have been a fact to which the universal statement "All Dutchmen are good sailors" corresponded, had this statement been true. But there was no distinctive, third, fact to which "Dutchmen are good sailors" corresponded. Its truth did depend on the truth of some statements of the form "x is Dutch and x is a good sailor," and perhaps these statements did correspond to brute Russellian facts, but "Dutchmen are good sailors" was not the conjunction of these statements and thus did not correspond to the fact, if there was one, that made the conjunction true. Nevertheless, the 17th century shipmasters had knowledge of its truth, and that truth mattered greatly in their world. Yet what they knew was not in that world. This is what puzzled Arnauld. There was no similar puzzle in the case of the other statements mentioned here.

"Dutchmen are good sailors" is an example of a vast number of statements of the form "Fs are G," some of great practical and scientific importance. Linguists call them "generic." They are general, not singular, but also not universal statements. Nor are they particular ("existential") statements, which are much weaker. They are usually made without intention to endorse the corresponding universal statement and are understood so by the listener. Arnauld gave as examples also "Frenchmen are brave," "Italians are suspicious," "Germans are large," "Orientals are sensuous," and many others.[8] In the recent literature of linguistics we find "Birds fly" (penguins are birds but do not fly), "Frenchmen eat horse meat" (most French people do not), and "John smokes a pipe" (sometimes he smokes cigarettes).[9] As the last example shows, a generic statement need not have the grammatical form "Fs are G," just as a universal

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[8] Arnauld and Nicole, *Logic*, 118.

[9] These and other generic statements are discussed in Manfred Krifka et al., "Genericity: An Introduction," in *The Generic Book*, eds. Gregory N. Carlson and Francis Jeffry Pelletier (Chicago: University of Chicago Press, 1995), 1-124.

statement need not have the grammatical form "All Fs are G," much less "For every value of x, if x is F then x is G." What matters is that the statement is intended and understood as replaceable, "upon analysis," by a statement of that form.

Here are some other examples. After the German election in September 2005, an observer wrote: "It is clear that Germans do not want to be governed by Angela Merkel. There is no other way to explain the CDU's collapse to a 35.2% in the election after reaching 49% only a couple of months ago in opinion polls." The author obviously did not mean that all Germans were unwilling to be governed by Angela Merkel. Yet, the statement is an example of coherent, perhaps astute political thought, and it might have been true. The *Encyclopedia Britannica* informs us that "The solubility of a gas in a liquid rises as the pressure of that gas increases," but it also says that "exceptions may occur at very high pressures." Economists say that reducing taxes leads to increased economic growth and therefore government revenue, but they do not deny that sometimes it does not. No pharmaceutical company promotes its drugs as 100% effective, and no responsible physician tells a patient that the recommended surgery is 100% safe. Parents, physicians, and politicians insist that smoking causes lung cancer, but even politicians avoid saying that it always does. Physicians do not even say that it is always bad for your health – the Surgeon General only says that it may be. "Exercise prolongs life" is considered true but, notoriously, exercise often fails to prolong life. Abstention from universal statements is characteristic of serious thought and discourse.

Indeed, universal statements themselves are commonly intended and understood as though they are only generic. Strawson noted that "there are many cases of subject-predicate statements beginning with 'all' which it would be pedantry to call 'false' on the strength of one exception or a set of exceptions."[10] It might not be pedantry in the case of universal statements in mathematics or highly theoretical areas in science. However, Strawson pointed out, they are also statements philosophers often consider analytic – or disguised definitions, meaning-postulates, reduction-sentences, inference-tickets, conventions – not statements of fact.

In everyday discourse, we do make universal statements that allow for no exceptions, e.g., "All of Jack's children attended the wedding," but they are readily replaceable with conjunctions of singular statements (the statement can be supported by a list of the children), which the typical universal statement is not. We make universal statements commonly for rhetorical purposes, e.g., saying "All politicians are crooked" when both speaker and listener know that some are not. In the interpretation and application of the law, universal statements are studiously

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[10] P. F. Strawson, *Introduction to Logical Theory* (London: Methuen, 1952), 195.

avoided because the possibility of exceptions must be allowed – this is why there are courts and lawyers. In the areas of science where most scientific endeavor takes place – geology, zoology, botany, medicine, anthropology, psychology, linguistics, sociology, economics, even much of biology and chemistry – universal statements are scarce. It is generic statements that are common, such as "*Morotopithecus bishopi* was a fruit-eater," which does not mean that all members of the species were fruit-eaters or that all they ate was fruit, or "Patients with prior strokes benefit from taking Lipitor," which does not mean that all do. Scientists shun universal statements because they believe that such statements could be justified only by information about real causal connections, which they seldom if ever have. They tend to rely, instead, on statistical reports like "265 or 11.2% of the patients who took Lipitor in a double-blind, randomized, and placebo-controlled clinical trial suffered a stroke over five years, while 795 or 37% of those who took a placebo did."

Aristotle noted that "it is the mark of an educated man to look for precision in each class of things just so far as the nature of the subject admits."[11] Hilary Putnam has remarked that "ceteris paribus, 'all things being equal,' clauses are needed in almost all generalizations. Almost all must allow for exceptions."[12] Steven Pinker said, regarding his theory of language acquisition, "I fully expect that [it] will be met with some counterexamples. My defense is that an acquisition theory that faces occasional counterexamples is better than no acquisition theory at all."[13] The legal scholar Frederick Schauer remarks that "Universal generalizations, whether the source of the universality be definitional or empirical, tend to interest philosophers, but most of the generalizations that the rest of us employ and encounter on a daily basis are not."[14]

Indeed, "generalization invites exceptions," "the exception proves the rule," and "rules are made to be broken" are sayings we hear often, the first implying that all general statements are really generic, and the other two that even a rule grounds only a generic, not a universal, statement. We resort to generic statements not because of indifference to accuracy but because there is no acceptable alternative. Usually, neither a universal statement understood strictly nor a particular statement or conjunction of singular statements would express what we can say legitimately when making a generalization.

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[11] Aristotle, *Nichomachean Ethics*, trans. W. D. Ross, Book I, 3.

[12] Hilary Putnam, *Renewing Philosophy* (Cambridge: Harvard University Press, 1992), 36.

[13] Steven Pinker, *Language Learnability and Language Development* (Cambridge: Harvard University Press, 1984), 97.

[14] Frederick Schauer, *Profiles, Probabilities and Stereotypes* (Boston: Belknap/Harvard, 2003), 9.

Arnauld contrasted universal truths about "the nature of things and their immutable essences," which admit of no exception, with universal truths about "existing things, especially human and contingent events," which "admit of some exception" and, if we supposed that they did not, would be "judged falsely, except by chance."[15] The former are "metaphysically universal." The latter are only "morally universal," like "the usual sayings 'All women love to talk,' 'All young people are inconstant,' 'All old people praise the past'." But Arnauld cautioned that "with respect to propositions having only moral universality" we ought not to "reject them as false, even though we can find counterexamples to them"[16] I have suggested that such propositions are much more common than those about "immutable essences." But, *pace* Arnauld, even the latter, including those Strawson would have called analytic, may admit of exceptions and thus are in fact only morally universal.

Consider the venerable definition "Man is a rational animal," meaning by "man" human being and by "rational," let us suppose, possessing intelligence deserving to be called intellect. It states the essence of man, *what* a man is, and logicians properly infer from it that all men are rational, indeed that this is necessarily so, "by definition." But the logicians do not mean that neonates display intelligence deserving to be called intellect. So, metaphysicians revise the definition by inserting the adverb "potentially." Some neonates, however, are not even potentially rational – they are born with severe and irremediable mental defects. The metaphysicians may revise the definition further, perhaps by appealing (in the past) to Aristotle's distinction between first and second potentiality or (today) to the genetic roots of intellectual capacities. But, if they do, they are no longer interpreting the definition, they are trying to rescue it. The original intention was just to say that men are rational animals, and both the definition and the statement inferred from it should have been so understood – and then left alone.

The argument for antirealism from the ubiquity of generic statements focuses on what may be called the logical structure of the world. The world is a structured whole, not a mere assemblage of things. Astronomy, physics, chemistry, and biology focus on its spatial, temporal, physical, and causal structure. Philosophy, at least as it was understood by the founders of contemporary logic and analytic philosophy – Frege, Russell, and Wittgenstein – focuses on its logical structure. If the first question of metaphysics is what kind of structure the world *must* have, then the first proposition of metaphysics is that it must have a logical structure. Aristotle held that the "science

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[15] Arnauld and Nicole, *Logic*, 263.
[16] Arnauld and Nicole, *Logic*, 114-15.

of being qua being," i.e., metaphysics, begins with the study of the principles of the "syllogism," i.e., logic.[17]

The logical structure of the world corresponds, at a minimum, to the classification in *Principia Mathematica* of statements as atomic, compound, and general. It thus provides for atomic facts about the properties and relations of individual things, for compound facts, and for general facts. Nothing would count as a world if it did not allow for atomic statements, e.g., "This page is white." Nothing would count as a world if it did not allow for compound statements, e.g., "This page is not red" and "If this page is white then so is the next page." Nothing would count as a world if it did not allow for universal and particular statements, e.g., "All men are mortal" and "There is water on Mars." But in addition to the general statements that logic recognizes, there are generic statements. I have argued that they are our chief vehicles of generalization, yet obviously correspond to nothing in the world. This is an argument for antirealism with respect to a specific but essential part of our cognition of the world. It resembles but is not the same as the antirealism with respect to universal and particular statements that was part of Wittgenstein's thesis that "there are no logical objects," which he announced in rejecting Frege's and Russell's logical realism.[18] Wittgenstein's logical antirealism may be plausible. But it is not nearly as plausible as plain, straightforward, antirealism with respect to generic statements, which neither he nor Frege or Russell even considered.

2. Facts, Generic Facts, and Realism

I have used 'fact' in Russell's and Wittgenstein's robust technical sense (its ordinary sense, in which some speak even of 'false facts', is too vague to be of philosophical value). Most philosophers today would deny that there are such entities. Indeed, so would I. But the category of fact is essential for understanding realism regarding the world, which following etymology we may call cosmological realism, even if not for understanding realism regarding individual things, which, again following etymology, we may call ontological realism. The reason is simple, obvious, and independent of Wittgenstein's views. If Jack admires Jill but Jill does not admire

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[17] Aristotle, *Metaphysics*, 1005 b 7-35.

[18] Frege had used the phrase 'logical objects' for the objects of arithmetic in the context of his project of reducing arithmetic to logic, a project continued later by Russell and Whitehead. For Wittgenstein's views on general statements, see, in addition to the *Tractatus*, his 1919 letter to Russell in Ludwig Wittgenstein, *Letters to Russell, Keynes and Moore*, ed. Georg Henrik von Wright (Oxford: Blackwell, 1974), especially 71. It is included also in his *Notebooks, 1914-1916*, trans. G. E. M. Anscombe (New York: Harper & Row, 1961).

Jack, what would distinguish the world in which this is so from the world in which Jill admires Jack but Jack does not admire Jill, the world in which they admire each other, and the world in which neither admires the other, if these worlds differed in no other respect? There would be no answer if we supposed that there are only individuals, properties, and relations. Only the *fact* that Jack admires Jill but Jill does not admire Jack, not their mere presence in the world, would distinguish that world from the other three. This is why Wittgenstein held in the *Tractatus* that the world is the totality of facts, not of things. Perhaps there are no such entities as facts, but then there is also no world, and cosmological antirealism wins by default. Realists cannot consistently hold both that there is a world and that there are no facts – robust, brute facts.

In his spirited defense of realism, Michael Devitt writes that "the sentence 'a is F' is true because it has a predicational structure containing words standing in certain referential relations to parts of reality and because of the way that reality is."[19] Yet, in the same paragraph, he denies that truth requires "mysterious entities" such as facts. One wonders what Devitt might mean, if not a fact, by a 'way that reality is', or by the word 'situation', which he uses several pages later when speaking of "pairing of sentences with situations."[20] Devitt is not alone in taking such a puzzling stand on facts. Hilary Putnam writes that a state of affairs (he could have said 'possible fact') is "a kind of ghostly double of the grammarian's sentence." But he then says, "Whether a descriptive sentence is true or false depends on whether certain things or events satisfy the conditions for being described by that sentence."[21] Presumably, this page satisfies the conditions for being described by the sentence "This page is white." How do those "conditions" differ from the state of affairs or fact that this page is white?

Paul Horwich defends a 'minimal theory' of truth, which he thinks avoids commitment to Russellian facts. He claims that his theory is 'perfectly consistent' with the 'intuitions' that "whenever a proposition or an utterance is true, it is true *because* something in the world is a certain way. For example, … <Snow is white>'s being true is *explained by* snow's being white."[22] Horwich, too, appeals to the "ways" something is, without telling us how these 'ways' differ from Russellian facts. Moreover, snow's being white would not explain <Snow is white>'s being

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[19] Michael Devitt, *Realism and Truth*, second edition (Princeton: Princeton University Press, 1997), 28.

[20] Devitt, *Realism*, 32.

[21] Putnam, *Words*, 301.

[22] Paul Horwich, *Truth*, second edition (Oxford: Clarendon, 1998), 104-05.

true unless "snow's being white" was a synonym of "that snow is white," which it is not. "Snow's being white" refers to a way snow is only if by "way" we mean a *property*, in this case the property of being white. And this property is only part of what explains the truth of "Snow is white." It is *that* snow has (exemplifies, instantiates) the property, not the property by itself, that explains the truth of "Snow is white." Speaking of snow's being white is quite different from saying that snow is white. Consider the analogy with the phrase "Jack's coat." It does not serve the same function as the phrase "that Jack has a coat," and so it does not fully explain the truth of "Jack has a coat." "Jack's coat" refers to an individual *thing*, a coat, and that coat is only part of what explains the truth of "Jack has a coat." It is *that* Jack has a coat, not the coat itself, that explains the truth of "Jack has a coat."

William P. Alston calls his theory of truth 'minimalist realism', and in a circumspect defense of it he writes, "I see no reason to suppose that facts are not objectively real, and as such capable of rendering true propositions true in a nontrivial sense." He adds, however, that the "mode of reality" of facts is "quite different from that of substances, states, properties of substances, and events, as Strawson and others have been at pains to point out."[23] Alston does not tell us what the difference is or what he means by "mode of reality." However, William Vallicella, also a defender of realism, does. He argues that true propositions require "truth-making facts." But he astutely points out that facts could be truth-making only if they are "proposition-like," "structured in a proposition-like way" – only if "a fact has a structure that can mirror the structure of a proposition."[24] Vallicella's view is in the spirit of Wittgenstein's position in the *Tractatus*, where we find the subtlest and deepest, however brief, accounts of the notions of fact and correspondence to fact. But Wittgenstein applied these notions, respectively, to atomic facts (*Sachverhalte*, states of affairs), which are "configurations of simple objects," and atomic (elementary) propositions, which consist of names of simple objects. Not surprisingly, he could give no examples of simple objects and therefore no examples of atomic facts or of atomic propositions. Wittgenstein saw that his notion of correspondence to fact had no application to the simple, compound, and general statements of everyday talk, much less (as he famously argued) to the statements of mathematics, logic, ethics, and religion, which, according to him, say nothing even though some show much, including 'the higher.'

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[23] William P. Alston, *A Realist Conception of Truth* (Ithaca and London: Cornell University Press, 1996), 41.

[24] William F. Vallicella, *A Paradigm Theory of Existence: Onto-Theology Vindicated* (Dordrecht, Boston, London: Kluwer Academic Publishers, 2002), 13, 166-7, 192-3.

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My distinctions among kinds of metaphysical realism and antirealism – cosmological, ontological, logical – may seem purely notional, fussbudgety, indulgence in technicalities for their own sake. They are not. Obviously, one who rejects generic facts need not reject universal and particular facts. But also one who rejects all general facts – universal, particular, and generic – need not reject compound facts. One who rejects both general and compound facts need not reject atomic facts. And one who rejects the category of facts altogether rejects realism with respect to the world but not necessarily realism with respect to things. The world might not be the totality of facts, as Wittgenstein held, but it certainly is not just the totality of things, their collection. For example, acknowledging the mind-independent reality of the stars is not the same as acknowledging the mind-independent reality of the world, unless by "world" is meant the mere collection of things. The realism/antirealism issue is much more nuanced than usually thought. Israel Scheffler objected to Goodman's *Ways of Worldmaking* by saying that surely we did not make the stars.[25] He failed to notice the very title of Goodman's book. An ancillary aim of this paper is to show that such objections are simplistic.

That generalization is crucial to cognition, and that the truth of universal and particular statements requires extralinguistic entities, was taken for granted by Frege and Russell, though they differed regarding what these entities might be. Both argued vigorously against the reductionist view – essentially logical antirealism applied to generality – according to which universal statements are just the disguised conjunctions, and particular statements the disguised disjunctions, of their singular substitution-instances, a view still commonly held. Frege wrote: "It is surely clear that when anyone uses the sentence 'all men are mortal' he does not want to assert something about some Chief Akpanya, of whom perhaps he has never heard."[26] Russell agreed: "When you have taken all the particular men that there are, and found each one of them severally to be mortal, it is definitely a new fact that all men are mortal." For, he went on, "in order to arrive [by complete induction] at the general proposition 'All men are mortal', you must already have the general proposition 'All men are among those I have enumerated.'" General propositions such as "All men are mortal" stand (if true) for general facts, Russell held. So, he concluded, there are general facts. Moreover, he pointed out, "there must be *primitive* knowledge" of some general facts" because "you cannot ever arrive at a general fact by inference from particular facts, however numerous."[27]

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[25] Israel Scheffler, "The Wonderful Worlds of Goodman," *Synthese* 45 (1980): 204.

[26] Peter Geach and Max Black, trans., *Translations from the Philosophical Writings of Gottlob Frege* (Oxford: Blackwell, 1970), 83.

[27] Bertrand Russell, *The Philosophy of Logical Atomism* (Chicago and La Salle: Open Court, 1996), 101 -103.

Russell's argument applied to general *universal* statements and facts. General *generic* statements, much less generic facts, were totally ignored by him, as they have been by virtually all philosophers. To be sure, Aristotle did note that the statement "Man is white," or, as J. L. Ackrill suggests, "Men are white," allows both that some men are white and that some men are not white, and acknowledged that such "indefinite" statements have no place in the "syllogism."[28] (Ackrill complains that they lack "an explicit quantifier" and for this reason he says, somewhat presumptuously, "it is a pity that Aristotle introduces [them] at all"). Kant sharply distinguished what he called strict universality from "assumed and comparative universality, through induction" which "is therefore only an arbitrary increase in validity from that which holds in most cases to that which holds in all."[29] Most universal statements indeed express only assumed and comparative universality, and perhaps Kant would have agreed that they are best understood as though they were generic. John Dewey did write about 'generic' and 'universal' propositions, but explained that by the former he meant just "propositions about kinds."[30] Quine in effect dismissed generic statements as involving "ambiguities of syntax": "Sometimes the plural form of a general term does the work merely of the singular form with 'every'; thus 'Lions eat red meat'… Sometimes it does the work rather of a singular with 'an' or 'some', but with an added implication of plurality; thus 'Lions are roaring.'"[31] It was twentieth century linguists and some legal scholars, not philosophers, who explicitly and seriously devoted attention to generic statements.

3. The Irreducibility of Generic Statements

Some logicians and philosophers of language have acknowledged the existence of the nonstandard quantifiers 'many,' 'few,' and 'most.'[32] None is reducible to the standard quantifiers 'all' and 'some.' Presumably, statements employing 'many' or 'few' defy a realist interpretation – their truth value obviously depends, at least in part, on our interests and attitudes, not on facts about what is many and what is few. Statements employing 'most' would allow a realist interpretation, if 'most' is

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[28] Aristotle, *De Interpretatione* 7, in J. L. Ackrill, trans., *Aristotle's Categories and De Interpretatione* (Oxford: Oxford University Press, 1963), 129.

[29] Immanuel Kant, *Critique of Pure Reason*, trans. Norman Kemp Smith, B 3-4.

[30] John Dewey, *Logic: The Theory of Inquiry* (New York: Henry Holt, 1938), 256.

[31] Willard Van Norman Quine, *Word and Object* (Cambridge: MIT Press, 1960), 134.

[32] See, for example, James Higginbotham and Robert May, "Questions, Quantifiers, and Crossing," *Linguistic Review*, 1 (1981): 41-79; Jon Barwise and Robin Cooper, "Generalized Quantifiers and Natural Language," *Linguistics and Philosophy*, 4 (1981): 159-219; Stephen L. Read, "Pluralitive Logic," in *The Cambridge Dictionary of Philosophy*, ed. Robert Audi.

taken to mean 'more than half.' Unlike generic statements, such nonstandard general statements, though useful and common, are hardly indispensable for generalization and thus for cognition.

Generic statements resemble statements employing 'many' and 'few' by defying a realist interpretation. They resemble them also by defying reduction to statements employing 'all' or 'some.' Indeed, generic statements are not reducible to any other kind of statement. Nicholas Asher and Jacques Morreau have remarked that "the puzzling thing about generics [is that] their truth conditions connect them at best only very loosely with particular facts about the world," and that they entail and are entailed only by other generic statements.[33] The latter is not quite true. "Dutchmen are good sailors" does entail "Some Dutchmen are good sailors," and it is entailed by "All Dutchmen are good sailors and there are Dutchmen."

But "Dutchmen are good sailors" does not entail "All Dutchmen are good sailors," and is not entailed by "Some Dutchmen are good sailors." It also neither entails nor is entailed by "All Dutchmen who are sailors are, always or usually, good sailors," which was the analysis Arnauld seemed to favor.[34] If only two Dutchmen are sailors, their both being good sailors would not be enough to make "Dutchmen are good sailors" true. The statement also neither entails nor is entailed by "Most Dutchmen are good sailors." Most Dutchmen are not even sailors, good or bad. And, if they were, but only 52% of them while 70% of Italians, 80% of Germans, and 90% of Norwegians are good sailors, this might not be enough to make "Dutchmen are good sailors" true. 52% of Americans are women, but it is not true that Americans are women. However, even if only 10% of Dutchmen are good sailors, this might be enough, as long as 2% of Italians, 3% of Germans, and 4% of Norwegians are good sailors. That the word "enough" is needed here indicates that we take generic statements to be true not because we find generic facts in the world that make them true but partly because of our interests and attitudes. In the 21st century "Dutchmen can read and write" would not be true if only 45% could read and write, but in the 17th century perhaps it was.

"Dutchmen are good sailors" does not entail that more Dutchmen than people of any other nationality are good sailors, absolutely or proportionally. We do not and need not compare Dutchmen with all other nationalities in order to make or accept the statement. If comparison does take place (usually implicitly), it is

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[33] Nicholas Asher and Jacques Morreau, "What Some Generic Sentences Mean," in *The Generic Book*, 300-38.

[34] Regarding "The French are good soldiers," Arnauld wrote: "[it] means that the French who are soldiers are usually good soldiers" (Arnauld and Nicole, *Logic*, 116).

largely, though not wholly, up to us with whom to compare them. Instead of Norwegians and Italians, we might pick Germans and Spaniards. But perhaps we would not pick Hungarians and Mongolians, because Hungary and Mongolia are landlocked, and we might think the comparison would be "unfair." At any rate, if only four Dutchmen and only two persons of any other nationality are good sailors, we are not likely to say that Dutchmen are good sailors. If only four Dutchmen and only two persons of any other nationality are graduates of the Dubuque College of Cosmetology, we would not say that Dutchmen are graduates of the Dubuque College of Cosmetology.

It has been suggested that "adverbs such as *usually*, *typically*, and *in general* are closest in meaning to the generic operator."[35] This would be trivially true of "in general" if inserting it in "Dutchmen are good sailors" merely makes explicit that the statement is general, and perhaps of 'typically' if it is used as a synonym of 'stereotypically' (see below). Not so of "usually." How usual must it be for a Dutchman to be a good sailor if the statement "Dutchmen are good sailors" is to be true? It might be true even if only 10% are good sailors, as long as only 6% of Italians, 7% of Germans, and 8% of Norwegians are.

Nor, contrary to another suggestion, need the statement be saying that all Dutchmen are *normally* good sailors. What being a good sailor involves, say, holding on a swaying line in raging seas, might be abnormal for all people, Dutch or not. Even becoming a sailor might be abnormal, in some legitimate sense of this vague word. It might conflict with emotions that are normal, such as fear of drowning. At any rate, as Gregory Carlson has conclusively pointed out, generic statements can also be made about *normal* kittens and *abnormal* drunk physicians. Are we to take the statements to be about normal normal kittens and normal abnormal drunk physicians?[36]

Shall we say, instead, that "Dutchmen are good sailors" means that all Dutchmen are good sailors in normal *circumstances*? But what are these circumstances? Sailing on merchantmen or sailing on men-of-war? Serving under demanding or serving under easy-going shipmasters? Short or long voyages? Perhaps people even become sailors mainly when the economic circumstances are abnormal. Being a sailor might be attractive only in such circumstances. But, again, what are these circumstances? High unemployment in the Netherlands? High unemployment just in its coastal areas?

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[35] Manfred Krifka et al., "Genericity: An Introduction," 25.

[36] Gregory N. Carlson, *Reference to Kinds in English* (New York & London: Garland, 1980), 38.

What such examples show is that no brute fact makes "Dutchmen are good sailors" true. But this does not mean that the statement is 'subjective." Although it was of special importance to shipmasters, its truth was not dependent on their personal whims or wishes. It might have been accepted by all other people in a position to know, e.g., first mates and ship owners. Its truth was objective in the proper sense of being intersubjective, agreed to by competent judges, people with knowledge and open mind about seamanship and seafaring. It was not what Kant called 'mere fancy.' As Carlson says, we know that not all dogs bark, but also we know that "Dogs bark" is true. He adds, "the knowledge that there are three-legged rabbits does not falsify the statement that rabbits have four legs."[37] If we say that nonetheless "Dutchmen are good sailors" was not *really* objective, we must mean that it did not admit of a realist interpretation, that it did not correspond to a fact. But this is exactly what I have argued.

Generic statements have been called vague, but their vagueness is unlike that of predicates. According to Peirce,

> A proposition is vague when there are possible states of things concerning which it is intrinsically uncertain whether, had they been contemplated by the speaker, he would have regarded them as excluded or allowed by the proposition. By intrinsically uncertain we mean not uncertain in consequence of any ignorance of the interpreter, but because the speaker's habits of language are indeterminate.[38]

Perhaps generic statements are indeed vague in this sense. But what Peirce had in mind was vagueness of propositions due to the presence of vague predicates like 'bald' – the quantity of hair on a person's head may be such that it is intrinsically uncertain whether a speaker would apply the predicate to it. Generic statements are not vague because they include a vague predicate. 'Good sailor' may be a vague predicate, but this would not be the main reason "Dutchmen are good sailors" is vague. It is vague because of its logical form. It would be vague even if we replaced the predicate "good sailor" with a predicate that is not vague. This is why generic statements are useful, indeed indispensable. Predicates such as "bald" are also useful and perhaps indispensable because they are vague. But their vagueness is different from that of generic statements.

Generic statements have also been said to be inexact, imprecise. Again, this is true, but how we understand it calls for caution. The inexactness of a generic

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[37] Carlson, *Reference*, 30, 36.
[38] C. S. Peirce, "Vague," in *Dictionary of Philosophy and Psychology*, ed. J.M. Baldwin (New York: MacMillan, 1902), 748.

statement is not due to the presence in it of an inexact word. The statement "Jack is here" is inexact, but if we wished we could state Jack's location with reasonable precision by saying, e.g., "Jack is in the kitchen," and might readily replace the former statement with the latter. In the case of "Dutchmen are good sailors," however, an attempt at precision is likely to yield a statement that, whatever its merits, we would not put in place of the original. Either it would significantly differ in truth value, as "All Dutchmen are good sailors" would, or it would not be even a general statement, as a conjunction of statements of the form "x is Dutch and x is a good sailor" would not.

Carlson distinguishes inductively established correlations from "real rules or regulations," associating generic statements with the former and universal statements with the latter.[39] It is unclear what he means by "real rules or regulations." But his phrase "inductively established correlations" is reasonably clear. Its use implies that, as Kant might have put it, generic statements possess at most assumed universality. Of course, Kant had in mind universal, not generic, statements, and, as we saw earlier, he contrasted those possessing only such universality with statements possessing "strict universality," meaning that they are also necessary and a priori. But generic statements, however they are established, lack even assumed universality – this is why they are generic.

Arnauld would have said that universal statements established inductively are only 'morally universal.' Russell and other epistemologists in effect have agreed: they are only 'probable.' According to Russell, even if the sun rose every day in the past, it is only probable that it will rise tomorrow. (He wisely avoided assigning a numerical value to the 'probability.') This was "the problem of induction." Indeed, reasonable people seldom expect inductive reasoning to yield more than a generic statement unless it is supported by causal information. We appeal to what 'history teaches' – e.g., in predicting election results, hurricanes, and the gyrations of the stock market – precisely when we lack such information. In both everyday and scientific reasoning, induction unsupported by causal information is usually taken to justify only generic statements, as the frequent occurrence of the phrase 'ceteris paribus' shows. This is why scientific writing routinely includes caveats such as "The precise mechanism through which fluticasone propionate affects allergic rhinitis symptoms is not known." The closer scientists are to field or lab, the less willing they are to venture universal statements.

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[39] Gregory N. Carlson, "Truth Conditions of Generic Sentences: Two Contrasting Views," in *The Generic Book*, 224-37.

Nevertheless, though based only on induction, "Dutchmen are good sailors" does not mean that all *Dutchmen* are probably good sailors, as Russell might have said. If only 10% of Dutchmen are sailors, it would be false that all Dutchmen are probably good sailors, whether in the statistical or in the epistemic sense of 'probably.' But it might still be true that Dutchmen are good sailors if, say, only 6% of Italians, 7% of Germans, and 8% of Norwegians are good sailors. Nor does the statement mean that all Dutch *sailors* are probably good sailors. It might be true even if only 40% of Dutch sailors are good sailors, as long as, say, only 15% of Norwegian, 14% of German, and 13% of Italian sailors are good sailors.

Asher and Morreau say that it is 'reasonable' to infer from "Fs are G" that something is G given that it is F. But inferring from "Dutchmen are good sailors" that Maarten is a good sailor given that Maarten is Dutch would not be reasonable if, as surely is the case, less than 50% of Dutchmen are sailors.

I noted earlier that the suggestion that "Fs are G" means "All Fs are typically G" might be acceptable if 'typically' is understood as a synonym of 'stereotypically.' A common complaint about generic statements is that they involve stereotyping, misrepresentation or at least exaggeration of the facts. The complaint targets mainly generic statements that, like Arnauld's examples, concern nationality, gender, race, age, or religion. These are sensitive matters, and people care deeply how statements about them might be intended or understood. Many resent, even find insulting, that such statements are made at all.

'Stereotyping' is a pejorative today, and it does apply to generic statements involving abuse of conceptualization or classification. But it is misplaced if applied to all generic statements. Like most conceptualization and classification, most generic statements are innocent. *New York Times* columnist David Brooks writes: "I believe most of human thought consists of stereotypes. I'm not against stereotypes; I'm against crude stereotypes." If we say that all generic statements involve stereotyping, then we must say that so do almost all universal statements, since almost all are intended and understood as though they are only generic. That the conceptualization or classification generic statements involve is sometimes abused counts against them no more than the frequent abuse of inductive reasoning counts against induction. Indeed, abuses of generic statements, including those charged with stereotyping, are usually just abuses of induction. And such abuses are common. Resort managers in the Bahamas say that one is more likely to be struck by lightning than to be attacked by a shark, and this is true, but it does matter whether one is swimming in the ocean or sleeping in a hotel bed. The type of inductive 'reasoning' exemplified in "We don't need fire insurance because we've never had a fire" is unfortunately familiar.

The variety of antirealism defended in this paper is modest and measured. It does not deny the reality of individual things or even the reality of atomic, compound, and universal facts. It denies only the reality of generic facts. This would hardly cause common sense to rebel. Even philosophers have not claimed that there are such entities. Yet, if cognition of the world requires the intellectual activity of generalization, and generic statements are the chief vehicles of generalization, then this modest and measured variety of antirealism has much of the bite of standard antirealism. Moreover, since it is based solely on the ubiquity and irreducibility of generic statements, it is more plausible than standard antirealism. It is also less obscure.