Reign of Terror of the French Revolution or an endorsement of unconstrained majority rule. For example, in 1945 Bertrand Russell wrote that Rousseau was "the inventor of the political philosophy of pseudo-democratic dictatorships" and that "Hitler is an outcome of Rousseau" (pp. 684, 685). Such interpretations, because they neglect the contrast between the general will and the will of all, typically reveal more about the ideological fears and commitments of the commentators than about Rousseau. In contrast, the final decades of the twentieth century brought a revitalization of liberal political philosophy, much of it under the influence of John Rawls, and with it came a renewed interest in the general will. Rawls's project can be understood as an attempt to reconcile the two elements that Rousseau identified as the central commitments of the general will: "If one inquires into precisely what the greatest good of all consists in, which ought to be the end of every system of legislation, one will find that it comes down to these two principal objects, *freedom* and *equality*" (II.11.1, p. 78).

See also Freedom; Justice; Liberty; Political Philosophy, History of; Rousseau, Jean-Jacques.

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GENERICS

Generics are noun phrases (NPs) and sentences of certain types; the phenomena exhibited by these NPs and sentences are known as "genericity." Two rather different phenomena are embraced by this term, and they both are of interest to philosophers.

THE FIRST PHENOMENON: REFERENCE TO A GENUS (OR KIND)

An example of the first phenomenon, reference to a genus, is the sentence *The black-capped chickadee winters in central Alberta*, which refers to the genus, or kind, *The Black-Capped Chickadee*. The sentence may also do other things, such as make claims concerning individual black-capped chickadees and the things they do. But the way it accomplishes these other tasks is to employ its NP subject term to refer to the kind and then make a predication about this kind. There are various tests that one might employ to show that NPs like this really do refer to kinds. For instance, note that predicates like *is (not) extinct* are true only of kinds and not of individual instances of a kind. It makes no sense to assert that *Tweety is extinct* (as opposed to being dead). But it does make sense to say *The black-capped chickadee is not extinct*, thereby showing that in this sentence at least, *the black-capped chickadee* refers to a genus. Of course, not every occurrence of *the black-capped chickadee* refers to a kind. For example, it does not do so in *The black-capped chickadee in the far cage needs more seed*; here *the black-capped chickadee* refers to an individual instance.

A fundamental question concerning this type of genericity is the following: What types of expressions can refer to genera? As the previous example shows, definite NPs can do this in certain sentences. And since the sentence *Black-capped chickadees winter in central Alberta* has the same force as the previous example, most theorists take these "bare plural" NPs also to refer to kinds, at least in this sort of sentence. Another type of NP that is of the same nature contains mass terms ("bare singular" NPs they are sometimes called) such as *gold, furniture*, and *information*. The subjects of sentences like *Gold is a yellowish metal* refer to a kind. There is at least one case in English of a bare singular count NP that designates a kind: In *Man evolved from the great apes*, the NP *man* (as opposed to the common noun *man*, as it occurs in … *is a man*) refers to a kind. And there are some proper names of kinds also, such as Ursa arctos horribilis *is common in the mountains of Alberta*. On the other hand, indefinite NPs do not refer to kinds (with an exception to be men-

tioned just below): *A grizzly bear is common in the mountains of Alberta* seems nonsensical; the indefinite NP in *A black-capped chickadee winters in central Alberta* refers to some individual instance of the kind. The same is true for quantified NPs: The subject NPs in *Every/Most/Some/All/Each/Few black-capped chickadee(s) winter(s) in central Alberta* quantify over individual instances of the kind, and do not designate the kind. (Actually, there can be reference to kinds using indefinite NPs and quantified NPs, but then these NPs are given a *taxonomic* interpretation. We can say *All dinosaurs are extinct*, meaning thereby that every species of dinosaur is extinct; similarly, we can say *A whale has been labeled as endangered*, meaning thereby that a species of whale, perhaps the Blue Whale, has been labeled as endangered.)

Another fundamental question concerning this type of genericity is the following: What are the truth makers for such sentences? Some of these predications seem clearly to predicate a property *directly* of a kind—in cases such as *The dodo is extinct*. But consider the (true) generic sentence *Man landed on the moon in 1969*. In such cases the truth maker would seem to be the initial person who satisfies the predicate; then this property is attributed or projected to the kind. But of course not every property that is true of an individual person becomes true of mankind. For this type of *indirect reference to a kind*, it seems that the property in question must be "important" enough: For sentences like *Man pole-vaulted 6 meters in 1985* do not seem true, even though Sergey Bubka of Ukraine did so in Paris in 1985 (and he was the first person to have done so).

We can also sometimes use an individual exemplar of a kind as the truth-maker for things we (or other agents) do, as in *We photographed the grizzly in Alberta last summer*, when in fact it was only a few of the instances of *Ursa arctos horribilis* that were photographed. These and other types of indirect reference to kinds are discussed by Krifka et al. (1995). The fact that predicates that are primarily true of ordinary individuals are somehow projected to be true of kinds raises questions of both a logical nature (about the resulting "type mismatch") and a metaphysical nature (about the relation between kinds and their exemplars).

Yet a further fundamental question concerns what kinds there are. The examples thus far surveyed have been of "natural kinds," but clearly there are kinds of artifacts: *Schockley invented the transistor in 1957* employs *the transistor* as designating a kind. And *The Coke bottle has a narrow neck* employs *The Coke bottle* in this way also; yet *The green bottle has a narrow neck* seems not so much false as nonsensical, unless *the green bottle* is taken to designate a particular bottle. Intuitively, there just is no such kind as The Green Bottle. Of course, with sufficient background contextual buildup one can make *The green bottle* be, for instance, the salvation of all those stricken with some new disease. Considerations like these have suggested to some that the notion of kind that is relevant to genericity in this first sense is "conventional" or "social."

THE SECOND PHENOMENON: GENERIC CHARACTERIZATION

An example of the second phenomenon, generic characterization, is the sentence *Lions have manes*, which predicates the property of having a mane "generically" to lions. By this it is meant that it is *generally* true (plus some qualifications to be discussed below) that lions have manes. As we know, only male lions have manes, so this predication is not universally true of lions. This feature is usually described by saying that generic characterizations *allow for exceptions* while they nonetheless remain true. It is this feature of genericity that has aroused the interest of logically oriented philosophers of language; for, given this portrayal of generic characterization, some radically new logical techniques will be required in order to employ these sentences in arguments.

Note that this second notion of genericity is a feature of entire sentences, whereas the first notion was a feature of NPs. But to complicate matters, the two phenomena can occur together, as in *The rutabaga contains vitamins A and C*, where *The rutabaga* exemplifies genericity of the first sort and the sentence as a whole exemplifies genericity of the second sort. (There might be some rutabagas that are missing either vitamin A or C, yet the original sentence would be true.)

Generic characterizing sentences express regularities about specimens of a kind: some regularities concern properties that are exemplified by the typical member (such as in the rutabaga sentence), whereas others express regularities of action that an object engages in (such as in "habitual" sentences like *Mary plays tennis after lunch*, which again is true despite the existence of days where Mary must work after lunch). It is this ability to express regularities in the face of exceptions that explains why all languages allow the expression of generic characterization. People notice regularities in nature and form "folk laws" to codify these regularities and predict what the future might bring. Despite the existence of exceptions, they are intellectually satisfying and practically useful because the objects *typically* or *usually* or *normally* or

nomically perform those actions. And such regularities commonly have exceptions.

Most writers in the genericity literature have argued that it is wrong to view these characterizing generic sentences as "really false but acceptable despite the exceptions because they are close enough to being universally true." For, they claim, most of our knowledge of the world is encoded in these generic sentences, so this is not a useful attitude. And if it were correct, then we would expect that sentences with fewer exceptions are more acceptable. But this is not borne out by examples, as we will see shortly.

These writers also have tended to shun the view that generics are *neither* true nor false but are instead directions or rules. For, this would make most of our knowledge become neither true nor false but instead directions to guide our belief formation ability. Further, since generics would not have a truth value, they could not be embedded inside propositional attitudes or joined into longer generic statements. But *John knows that rutabagas contain vitamin A* and *It is common that countries that do not honor women's rights also do not honor general human rights* are in fact either true or false.

Consider this list of (true) characterizing generic sentences:

1. Snakes are reptiles.
2. Telephone books are thick books.
3. Guppies give live birth.
4. Italians are good skiers.
5. Crocodiles live to an old age.
6. Frenchmen eat horsemeat.
7. Unicorns have one horn.

Obviously these call for different proportions of the subject terms satisfying the predicate. In (1) it is all; in (2) most; in (3) some subset of the females; in (4) some small percentage, but a greater percentage than in other countries (or maybe the very best of the Italian skiers are often better than the very best from other countries); in (5) it is strikingly few, since of the hundreds born to one female at a time, most are eaten within a few weeks of birth; in (6) there need be only a very small percentage—somehow the culturally determined views of North America make it striking that it happens at all; and in (7) no unicorns have one horn. Such examples show that there is no univocal quantifier that will serve in all characterizing sentences.

Even attempts to employ vague, probabilistic quantifiers such as *most* or *generally* or *in a significant number of cases* are misguided. Consider such false characterizing sentences as the following:

8. Leukemia patients are children
9. Prime numbers are odd.

These false sentences would become true if prefixed by *In a significant number of cases*. Indeed, the actual number of cases has nothing to do with the truth of the characterizing generic sentence as opposed to what evidence we might have for the sentence's truth. We might use the preponderance of thick telephone books in the world as our evidence for the truth of (2); but we will be prepared to retract it when we discover other relevant background facts, as perhaps happens with (9). This is often put as "characterizing sentences are inherently intensional." A sentence like *Members of this club help one another in emergencies* can be true despite there never having been any emergency. What is required for its truth is intensional: the preparedness to act in certain ways in certain situations. This intensionality is often claimed to thwart any attempt to use an extensional quantifier in the analysis of characterizing generics.

TWO RELATED AREAS

The feature of allowing for exceptions while nonetheless remaining true raises interesting issues in logic. This general topic is called *nonmonotonic reasoning* in the artificial-intelligence literature. Although these researchers do not explicitly aim to provide a semantics for characterizing generic sentences, nonetheless results of their research might be pressed into service for this purpose (Pelletier and Asher, 1997).

The issue of how children can learn that some occurrences of NPs are universal, others existential, and still others generic has been investigated both from the point of view of English-speaking children learning language (Hollinger et al. 2002) and comparatively between English-speaking children and Mandarin-speaking children (Gelman and Tardif 1998). It seems that children learn the difference by the age of four and that there is a difference in the frequency of generic vs. nongeneric NPs and sentences encountered by English and Mandarin children.

PHILOSOPHICAL CONSIDERATIONS

Genericity has been seen by some as requiring an ontology of (abstract?) kinds, individuals, and (momentary) stages of individuals. Furthermore, it seems to some that the semantics of generics presumes that these kinds are

conventional in some way. And the issues surrounding natural laws that admit of exceptions has been seen by some as endorsing a kind of scientific antirealism. All of these considerations raise deep questions of the relation between semantic models of natural language and reality. Some have claimed that the relationship should be modest and that these ontological conclusions pertain only to the metaphysical presuppositions of natural language—a natural-language metaphysics, in the phrase of Bach (1986)—but not necessarily to reality. This is the deepest issue in philosophy of language.

See also Conventionalism; Non-Monotonic Logic; Plurals and Plurality; Propositional Attitudes: Issues in Semantics; Realism.

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GENETICS AND REPRODUCTIVE TECHNOLOGIES

Modern genetics and technological aids to human reproduction, like other advances in science and technology, have created ethical problems heretofore unencountered. Biomedical developments have also posed new conceptual, epistemological, and metaphysical problems. This entry addresses these philosophical concerns as well as the more widely discussed ethical implications of contemporary genetics and reproductive technologies. One conceptual and ethical link between these two fields is the prospect of "designing our descendants." This prospect has been viewed by some as a boon to humankind (Fletcher 1974) and by others as a fearsome possibility to be avoided at all costs (Ramsey 1970).

The Human Genome Initiative, a "big science" project launched by the U.S. government to map and sequence the entire human genome, has heightened concerns about the privacy and confidentiality of genetic information, the uses to which such information might be put, and the possibility of stigmatizing individuals or groups because of their genetic constitution. The knowledge the Human Genome Project can yield is massive in contrast to previous efforts to acquire information about human genetics.

The contemporary science of genetics provides, not only an understanding of heritable traits, but also the capability to diagnose the probability or certainty of transmitting to offspring genetic conditions such as sickle-cell anemia. Tay-Sachs disease, or cystic fibrosis. The ability to identify and locate specific genes that render a person likely to manifest heritable conditions, such as Huntington's disease and certain forms of cancer, raises profound questions about the wisdom and desirability of learning about future contingencies when no cure exists and preventive measures are of uncertain efficacy.

A conceptual question is prompted by the rapid advances in genetics: What constitutes genetic disease? The traditional concept of disease relies on the ability of medical scientists to identify deviations from the normal physiological functioning of an organism. Asymptomatic diseases, such as hypertension, can be detected by diagnostic instruments even though the individual feels no symptoms of illness. With the discovery of genes that render an individual with a family history highly likely to develop a particular disease later in life, how should the