

The Inseparability of Logic and Ethics

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Logic and ethics are too often regarded as separate, if not somehow in opposition to each other. But many great logicians, including Aristotle, Ockham, Bolzano, De Morgan, and Russell, were capable of incisive contributions to ethics and of heroic actions grounded in ethical insight. Likewise many exemplary moralists, including Socrates, Plato, Kant, Mill, Gandhi, and Martin Luther King, showed by their teachings and actions a deep commitment to objectivity, the ethical value that motivates logic and is served by logic. This article explores the role of logic in ethics and the role of ethics in logic.

It is important to investigate the hypothesis that the ethics of the future must accord logic a more central and explicit role. Connections between ethics and irrational subjectivities must be severed; human dignity and mutual respect can be based to a greater extent on the universal desire for objective knowledge.

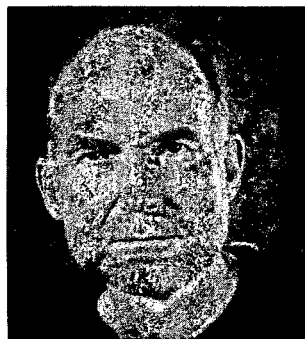
Likewise it is important to investigate the hypothesis that the *logic* of the future must accord *ethics* a more central and explicit role. Logical principles are important because they serve ethical goals. Logic is peculiarly and essentially a human pursuit; the alleged disconnections between logic and human involvement must be refuted.

The caricature of logic as a meaningless game of symbol manipulation and the caricature of ethics as a rationalization of blind emotion must both be exposed. Logic and ethics are in fact inseparable and each is served by explicit recognition of its involvement with the other.

Objectivity

Aristotle observed that all humans by nature desire to know. Our attention is thereby drawn to objectivity, to the intention to make up one's mind in accord with the facts, whatever they may be, whether they fulfill or frustrate hopes, whether they intensify or allay fears, whether they are compatible

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or incompatible with previously accepted beliefs. Objectivity involves what has been called love of truth, devotion to truth, loyalty to truth. It is recognized as a characteristically human trait that serves to unify the human race. It is at the same time an ethical virtue that requires cultivation. The primary goal of logic is the cultivation of objectivity. Logic aims at concepts, principles, and methods that are useful in making up one's mind in accord with the facts.

If humans were omniscient or infallible there would be no logic because there would be no need for it. If they were indifferent to truth or lacked concern for it, again there would be no logic because there would be no desire for it and no motivation to develop it. The human condition is replete with unfulfilled and perhaps unfulfillable aspirations. Here we juxtapose human ignorance and fallibility with the aspiration to knowledge.

Logic might be said to begin with observations about this gap between accomplishment and aspiration. Belief is not necessarily knowledge. The feeling of certainty is not a criterion of truth. Persuasion is not necessarily proof. Indeed, one of the perennial problems in logic is the perfection of criteria of proof, the development of objective tests to determine of a given persuasive argumentation whether it is a genuine proof, whether it establishes the truth of its conclusion. But alongside the negative observation that humans are neither omniscient nor infallible are the positive observations that the desire to know the truth can be fulfilled to a greater extent than it has been thus far, that it is possible to approach the ideal ever closer, and that objectivity can be cultivated.

The three facts that begin logic—that humans are neither omniscient nor infallible, that humans seek knowledge, and that improvement is possible—are three facts that serve to bring humans together. It is possible to cooperate in the goal, at once noble and practical, to overcome ignorance and fallibility as much as possible. Objectivity automatically involves cooperation and avoidance of deception, whether deception of others or by others, or even deception of and by oneself. It is said that the most destructive lies are those we tell to ourselves.

Objectivity, which involves the intention and the capacity to make up one's mind in accordance with the facts, is an important virtue. But taken alone it might appear to be cold, alienating, and to some extent even dehumanizing—it might even appear to conflict with and exclude other virtues. But these appearances are based on several errors.

It is obvious of course that being objective requires being dispassionate. But being dispassionate does not exclude being passionate. Some of the most moving stories of the triumph of objectivity involve people who were passionate in their dedication to truth and who were moved to heroic personal sacrifices in order to develop and test their ideas. Being disinterested is not the same as being uninterested. Being an impartial observer is not the same as being an indifferent observer. Being dispassionate and impartial requires care, concentration, and energy; passionate dedication to truth can supply that energy.

Moreover, being dispassionate does not exclude being compassionate. Indeed, in order for compassion to be effectual and beneficial it must be accompanied by objectivity. For example, the practice of medicine is often motivated by compassion for human suffering, but without objectivity, attempts to alleviate suffering can be expected to be self-defeating. In many cases, compassion and objectivity enhance each other.

Compassion not only does not exclude, but actually *requires* objectivity, and this is not an isolated case. All virtues are compatible with objectivity, and most, if not all, virtues require it in order to be effectual and beneficial. Without objectivity the other virtues are either impossible or self-defeating or at least severely restricted in effectiveness. In fact, in many cases lapses in objectivity tend to turn the other virtues into parodies, mockeries, or perversions of themselves. Attempts at kindness without objectivity often end up as insulting paternalism. "Justice" without objectivity is arbitrariness. "Courage" without objectivity is rashness. "Integrity" and "moral steadfastness" without objectivity tend to become willful stubbornness and even fanaticism. Worthy causes have been embarrassed by lapses in objectivity by their ardent supporters. A worthy cause can have as much damage done to it by an overzealous supporter as by a detractor. With unobjective friends, a cause does not need enemies.

Objectivity is a rather distinctive virtue. We tend to value people for their objectivity and to be disappointed and even annoyed with people when they suffer avoidable lapses in objectivity. When there are important decisions to be made or jobs to be done, we try to surround ourselves with people noted for their objectivity—regardless of whether we enjoy their company for other reasons. But what is even more distinctive is that objectivity gives rise both to pride and to humility. Objectivity gives a person a sense of self-worth and dignity. People take just pride in their objectivity. At the same time, objectivity makes people especially alert to their own fallibility and thereby inspires them with a sense of humility, caution, and modesty.

To get a measure of how objectivity tends to unify humans and to transcend accidental differences such as age, sex, race, nationality, religion, and class, just consider international cooperation in mathematics, science, technology, and, perhaps most important, human rights. When people focus on making up their minds in accord with the facts in order to accomplish a common objective, accidental differences recede into the background. What matters is not who a person is or even what he believes, but rather how he arrives at those beliefs and what attitude he has toward them—in particular, whether

he is ready to have those beliefs objectively examined.

Cultivating objectivity

Although the desire for objectivity seems to be universal and natural, the process of becoming objective requires skills and attitudes that many people at first do not find natural or easy to acquire. Perhaps the first such skill is that of making a hypothesis, of setting forth a proposition for investigation. There is little difficulty when the proposition is not already believed to be true and not already believed to be false. In such a case, there is rarely any resistance to the project of submitting the proposition to examination and testing.

Logicians use the word *hypothesis* to refer to a proposition that is neither known to be true nor known to be false by the relevant community of investigators. They also extend this usage so that the word refers to a proposition that is taken, for purposes of reasoning, *as if* it were neither known to be true nor known to be false. The point of making a hypothesis is to test it objectively, to review the evidence pro and con, to critically evaluate the relevant argumentations, to determine whether errors have been made, to see how it will stand up to objective investigation. The initial process of hypothesis-making has been referred to as *bracketing*, as *suspension of belief and disbelief*, and as *methodological doubt*.

When people have been deceiving themselves about the cogency of their evidentiary processes they are naturally afraid to have their own beliefs submitted to investigation. But even sincere people who have not had experience in this process tend to regard it as dangerous. When bracketing a proposition or setting forth a hypothesis, one sets aside all preconceptions about it, however well established these preconceptions may have appeared.

In an open community every attempt to prove or disprove a proposition is at the same time a bracketing of the proposition. Every attempt to settle a hypothesis is automatically an invitation that it be critically examined. In fact, in order to follow a proof it is necessary to doubt the conclusion and to see that the proof removes the doubt. This is part of what is meant when we say that knowledge comes from doubt.

The disinclination to have a belief considered as a hypothesis is often a sign of dogmatism, closed-mindedness, and self-deception. But sometimes it is simply a reflection of ignorance of logical methodology. If a proposition is true, its adherents have nothing to lose by having it critically investigated. On the contrary, they have much to gain. On the other hand, if a proposition is false, the sooner it is recognized as such, the better. Shielding a proposition from critical examination serves no useful purpose.

Sometimes we are afraid to go to the doctor when we suspect that we have incipient symptoms of illness. Sometimes it takes courage to face up to the truth. But the clearer a person becomes about the ultimate desirability of knowing the truth in a given case, the less courage is needed to put the issue to the test.

To a community of objective thinkers, any attempt to shield a proposition from the testing process reflects badly on those

who believe it to be true. Shielding a proposition from testing is seen as shoddy, undignified, and ultimately absurd. A proposition not worth testing is not worth being taken seriously.

Another thing that facilitates willingness to submit beliefs to the test is knowledge of logical principles. For example, a person who cannot recall evidence for a given belief may become gripped with fear when that belief is raised as a hypothesis. It is a feeling similar to that encountered when one cannot locate money to pay for a meal already consumed. But it is clear that the analogy does not carry over once a person is aware of the principles of evidence. The *fundamental principle of evidence* can be stated roughly as follows:

The absence of positive evidence by itself is never conclusive negative evidence and the absence of negative evidence by itself is never conclusive positive evidence.

At first it may seem that this principle conflicts with the *principle of excluded middle*:

Every proposition is either true or false.

But it becomes clear that there is no conflict as soon as it is realized that there are distinctions both between *true* and *proved to be true* and between *false* and *proved to be false*. The *principles of nonomniscience*, which embody these distinctions, are in part, as follows:

Not every proposition is either proved to be true or proved to be false. Not every true proposition is proved to be true. Not every false proposition is proved to be false.

Ignorance of the fundamental principle of evidence has been exploited by unscrupulous persons and groups. An unscrupulous person may make a baseless charge and, when challenged to present evidence, try to turn the situation around by asking for evidence to the contrary in order to give the impression that the absence of evidence to the contrary is actually evidence in favor of the charge. In recent years purveyors of unsafe consumer products have delayed having their products rejected by using tactics that exploit consumer ignorance regarding the fundamental principle of evidence. The tobacco industry has tried to get people to believe that cigarettes are safe by reiterating that scientists have been unable to prove conclusively that smoking causes various illnesses.

The dispassionate search for truth tends to bring out the best in people. The study of logic, not as a system of external rules, but as an intensely personal attempt to be objective about objectivity, contributes to this search. On the other hand, attempts to defend preconceived beliefs by whatever means necessary, even deception and coercion, tend to bring out the worst in people.

The Hypothetico-Deductive Method

In logic the word *proof* and its cognates are used in the strict sense. A proof that a proposition is true actually

establishes that it is true; such a proof produces objective knowledge of the truth of its conclusion. The same thing holds, with the obvious changes, for proof that a proposition is false.

The hypothetico-deductive method is often preliminary to proof and sometimes it actually results in proof. The simplest form of this method of investigation consists in setting forth a hypothesis and seeing which propositions can be deduced from it and also which propositions it can be deduced from. The object, of course, is to determine what else would be true if the hypothesis were true and what else, being true, would explain the truth of the hypothesis—in other words, to find out what would be explained by the hypothesis being true and what would serve to explain the hypothesis being true. In short, two questions are asked:

What are the logical consequences of the hypothesis?
What is the hypothesis a logical consequence of?

People who are not accustomed to using this method are often amazed at the clarity it produces and at how many things come to light once it is used.

Quite apart from the fact that the hypothetico-deductive method sometimes leads to proof, it is useful in cultivating objectivity because it leads to a better understanding of the hypothesis in that it produces knowledge of what to expect were the hypothesis true and of what would result in the hypothesis. If the statement of the hypothesis is ambiguous, this process often brings the ambiguity to light and provides suggestions for revisions. If the hypothesis is vague, this process can locate the vagueness and provide suggestions for sharpening it.

How can this method lead to proof or disproof? There are several possibilities, only two of which will be considered here.

First, let us imagine that from the hypothesis we have deduced a proposition that was already known to be false or that was subsequently determined to be false, say by experiment. In this case we have a disproof of the hypothesis, a proof that the hypothesis is false. This is so in view of the following principle:

Every proposition that implies a false proposition is itself false.

This is the familiar *principle of false consequence*, which is the basis for much productive thinking. It is the principle most often used in exonerating innocent defendants and, more generally, in rejecting false hypotheses.

There are of course many other ways in which knowledge of this principle leads to the cultivation of objectivity. For example, by focusing on the principle of false consequence we are reminded of the fact that a proposition is false if even one of its consequences is false, and that a person making an assertion is as responsible for each of the consequences of the assertion as for the assertion itself. This should move an objective person to be a bit more cautious and to do some deductions before making an assertion.

Second, let us imagine that we have deduced the hypothesis

from a proposition that was already known to be true or that was subsequently determined to be true. In this case we have a proof of the hypothesis in view of the following principle:

Every proposition implied by a true proposition is itself true.

This is the familiar *principle of true implicant*, also known as the *principle of truth and consequence*. This principle is also the basis for much productive thinking. It forms the basis for the reasoning employed in the axiomatic development of the various branches of mathematics, and it is involved in understanding mathematical proof, which is a kind of ideal standard against which to measure argumentations that fall short of mathematical proof.

Proof

In order to discuss the concept of proof, it is useful to have a typical example in mind. Consider the Euclidean proof of the Pythagorean Theorem. Its premise-set consists of axioms and definitions for plane geometry, which presumably are known to be true by the audience. Its conclusion is the Pythagorean Theorem. Its chain of reasoning extends over several pages and includes over forty intermediate theorems, and its final passages involve a clever recipe for dividing the square on the hypotenuse into two pieces, each adjacent to a leg of the triangle and each equal to the square on the adjacent leg.

In order for this proof to be conclusive for a given audience it is necessary for the premises to be known to be true by that audience. There is no way to base knowledge on premises not known to be true. When the audience does not have knowledge of the premises, the argumentation is said to *beg the question* or to *commit the fallacy of unwarranted assumption*. But the conclusiveness of the proof also requires that the chain of reasoning make clear that the evidence is sufficient, that the premise-set actually implies the conclusion. When this is lacking, the argumentation is said to be a *non sequitur* or to *commit the fallacy of inadequate reasoning*.

The main idea here is the familiar fact that every proof has three parts: a conclusion, a premise-set, and a chain of reasoning. Normally the chain of reasoning is by far the longest part. In a proof the chain of reasoning shows that the conclusion is implied by the premise-set. The chain of reasoning by itself does not show that the conclusion is true but only that it is implied by the premise-set. In order for the conclusion to be recognized as true by means of the chain of reasoning, the person doing the recognizing must have already verified that the premises in fact are true.

Analogous considerations apply in argumentation that falls short of mathematical proof. It is necessary to establish the premises—in other words, to make sure that what is alleged to be evidence is accurate as it stands without regard for what it is supposed to be evidence for. In addition, and this is an entirely different issue, it is necessary to establish that what is alleged to be evidence for the conclusion is sufficient to imply the conclusion. If this is not so then the conclusion

is not proved even were the alleged evidence correct. To summarize, there are two things to check: whether the alleged evidence is accurate, and whether the chain of reasoning makes it clear that the alleged evidence, if true, would warrant acceptance of the conclusion.

Fallacious reasoning from warranted premises is no better than cogent reasoning based on unwarranted premises. In many cases of shoddy argumentation people waste their energy squabbling over the premises when a cursory examination of the reasoning would bring down the argumentation like a house of cards.

There are two arts involved in proof. There is the art of producing or discovering proof (a *heuristic art*), and the art of recognizing proofs (a *critical art*). This critical art brings us back to the problem of perfecting criteria for proof. In order for an argumentation to be a proof of a given conclusion for a given audience, it is necessary that the argumentation persuade the audience of the truth of the conclusion. But persuasion is not sufficient, and criteria are needed to prevent deception and error.

Whether a person is creating a proof or critically evaluating an argumentation offered as a proof, the underlying guiding principle is the *golden rule of proof*:

Argue unto others as you would have them argue unto you.

When you have produced an argumentation and you are wondering whether it is a proof, ask yourself whether you would find it acceptable were a respected adversary to offer it to you. Likewise, when an argumentation is offered to you as a proof and you are wondering whether you should accept it, ask yourself whether you would offer it to a respected adversary and whether you could stand behind it.

Conclusion

In the above discussion we have reviewed only a few facets of the interrelatedness and interdependence of logic and ethics. We have seen that ethical practice involves logic insofar as the other virtues require objectivity in order to be effectual and beneficial, and in some cases even for their very existence or realization. There was, unfortunately, no room in such a short discussion to explore the role of logic in ethical theory. The importance of consistency and of criteria of consistency in ethical theory was not mentioned, nor was the role of logic in the analysis of ethical concepts and propositions.

One of the most important points is one that is often overlooked and that may have not been treated before to the extent that it has been treated here. I have in mind the fact that logic can be seen as an ongoing, imperfect, incomplete, and essentially incompletable attempt to cultivate objectivity, to discover principles and methods that contribute to the understanding and practice of objectivity, which is an ethical virtue standing alongside kindness, justice, honesty, compassion, and the rest, and which is characteristically human in the sense that an omniscient or infallible entity would have no use for objectivity and no use for logic. Logic is a humane and humanistic science; it is one of the humanities in the renaissance sense. ●