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Formal Logic and Philosophic Analysis

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...it is rather the essence of our investigation that we do not seek to learn anything new by it. We want to understand something that is already in plain view. For this is what we seem in some sense not to understand.1

1. Logical Theory, Logical Thinking, and Logical Artifice

In his article "On Teaching Logic," Peter Geach reminds us of a distinction that will prove convenient in the present context, despite the ambiguity on both sides of the distinction:

In medieval writers an important distinction was drawn between two applications of the term 'logica': there was logica utens, the practice of thinking logically about this or that subject-matter, and there was logica docens, the construction of logical theory. Of course the English word 'logic' and its derivative 'logical' have a corresponding twofold meaning.... 'Logical thought' may mean thinking that is being commended as orderly, consistent, and consequent, whatever its subject-matter; or it may mean the thinking of logicians about logic, which alas has not always exhibited these virtues. Similarly for 'teaching logic': there is trying to get people, by precept and example, to be orderly, consistent, and consequent in their thinking, and there is the endeavor to train logicians for the next generation.

Whatever else is relevantly entailed in logica docens, elementary formal logic is part of the parcel—indeed, the bare minimum of any present-day logica docens.

Now there are those who for good and apparent reason doubt that formal logic has much use for teaching logica utens.4 Is formal logic good then only for training logicians for the next generation? Is logica docens not instructive for teaching orderly, consistent, and consequent thinking about whatever subject-matter? I will maintain that of course it is. That elementary formal logic provides a valuable model of what it might mean to be orderly, consistent, and consequent. That classical formal models of these commendable properties can be quite instructive as heuristic constraints in disciplining philosophic argument and analysis at the introductory level.

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Elementary formal models of argument 'validity' and 'soundness' provide indispensable foils and points of departure for more searching philosophic discussion of what-all it might mean for a conclusion to 'follow logically' from putative premises. It is hard to imagine how one could dispense with the classical notion of validity in a logic course of whatever description if one wanted to philosophize at all about what might make for strong evidentiary connections between premises and conclusions—and even if one wanted ultimately to eschew formal deductive systems for ones that were somehow more easily or aptly deployed in everyday settings.

But the point I wish to illustrate in what follows is not the obvious importance of formal validity as a topic for philosophic analysis, but rather the utility of the classical formal apparatus as a model and objective standard of logical rigor and as a heuristic albeit artificial device for introducing a minimum of order, consistency, and consequence into crucial tasks of philosophic analysis. For purposes of introducing students to the tools and techniques of both logic (however construed) and philosophic analysis, I have found it immensely useful to be able to discipline philosophic argument and inquiry within the rudimentary formal framework of first-order logic. I see no reason that elementary formal logic should not be most effectively taught both as a topic and as a heuristic constraint for critical philosophic analysis, even at the introductory level.

So taught and applied, formal logic will of course be outstripped by the subtleties and intuitive reach of logica utens. But this fact does not gainsay its heuristic utility in the search for some tolerably objective semblance of logical order, consistency and consequence.

Sometimes one wants a plain argument from authority, validity be damned. Geach will do nicely:

*Logic utens does continually outrun logica docens.... All this means to me is that logica docens has a great deal of unfinished business: pace Immanuel Kant, it is not a finished science.*

_Pace_ Suppe, Griffith, and other articulate critics of the presumptions of formal logic, teaching formal logic as both a topic and rudimentary tool of philosophic analysis is one way to dragoon students into a philosophic appreciation of this important if unfinished business and, perhaps, into pursuing it further. Both the appreciation and the pursuit strike me as commendable objectives of education in the liberal arts. For surely formal logic need be no less liberal nor less artful for being an unfinished science.

Geach puts the general point well, without apologizing for the avowed artificiality of the "logic wished upon mankind by professional logicians":

Now _logica utens_, as a matter of good habits of mind, needs be backed up with a modicum of _logica docens_ that the student has made his own. If a man's assumptions do not include some pair of flagrantly inconsistent ones, he may still be inconsistent in his position, _but in a way that it takes logical artifice to bring out_ (emphasis mine). As regard consequent thinking, people often say that logic can tell us no more than we already know: but the trouble
is that, until logic tells us, we may not know just what are the things which in this odd sense we are said to 'know already.'

In the material that follows I try to illustrate a range of tasks, basic to philosophic analysis, in which formal-logic artifice can be instructive if not crucial. I first provide a bit of background on the course setting from which my illustrations are drawn.

2. A Course Combining Formal Artifice and Dialectical Method

In my own course in formal logic with applications to philosophic analysis for entering freshmen I have developed a package of eight computer-assisted instruction (CAI) programs in logic and argument analysis to teach first-order logic (with identity) at the level of Kahane's treatment in *Logic and Philosophy* (although I use my own unpublished textbook). The CAI package includes question-and-answer tutorials, drill-and-practice routines, and proof-checking and argument-reconstruction programs that operate both on sets of stored English argument texts and on any argument that the students wish to enter. (Sample computer-based exercises are included in the appendix.) These programs facilitate coverage of first-order logic, with caveats, sample applications and a bit of finessing, in roughly half a semester. This leaves a lot of discretionary time for pursuing broader issues in logical theory or more extended applications of the formal apparatus in various tasks and contexts of philosophic analysis. For an entry-level freshman requirement, the course has been very well received and, by all standard accounts, the computer-based logic has been both popular and effective.

Instead of employing a set of unconnected philosophic arguments merely as vehicles for logical exercise, I employ the formal analysis and reconstruction of arguments, in conjunction with other philosophic tools and dialectical techniques (see Section 3, below), as a guide to sustained inquiry into systematically related philosophic topics (as it happens, in social philosophy). The formal artifice thus provides a tool and a framework for sorting out positions, issues, and strategic options in sustained and systematic inquiry (See section 4, below).

Formal analysis and reconstruction of positions provides operationally definable heuristic constraints on both the search for unstated premises and the successive reformulation of positions and their underlying principles in the course of dialectical give-and-take. The reconstruction of arguments in expressively valid form provides clear targets for analysis and attack, and an orderly way of tracking issues as objections to particular premises arise. Manifestly valid arguments, in their initial and successive formulations, become centerpieces for dialectical analysis in assigned papers. Because the primary objects of analysis are philosophic positions and their underlying principles, under dialectical duress, the insistence on deductive validity seems a suitable pedagogical device and regulative ideal. Express attention is also given to the method and procedural rationale of dialectical inquiry, as it applies to the defense and critique
of both the logical norms in use and normative principles in general.

Difficulty in formalizing principles or arguments provides occasion for reflection on the subtleties of intuition and language that persist in eluding our formal system. But the demand for manifest validity in argument forces reflection amid concerted attempts at greater precision and explicitness in formulation. I attempt, then, to create a sense of what it is like to pursue systematic dialectical inquiry within strict if idealized constraints of logical order, consistency, and consequence.

Except for my exclusive focus on philosophic arguments and the imposition of the problematic but well-defined constraint of manifest validity (so far as that is attainable within the frame of first-order logic), the game plan or protocol of argument analysis is similar to that of such applied texts as Stephen Thomas' *Practical Reasoning in Natural Language.* With the aid of our computer-assist programs the typically daunting apparatus of first-order logic, along with our protocol for argument reconstruction, can be learned in roughly the time it takes other classes to cover Thomas' curriculum. Students get the bonus of learning a fair complement of formal logic while learning the 'informal' rudiments of argument analysis. One advantage of having the formal apparatus at hand is that it makes ill-defined tasks like formulating appropriate missing premises or underlying principles better defined than in the absence of formal constraints (like manifest validity), since it renders the determination of logical consequence testable by tolerably objective criteria rather than by mere intuition.

What follows are some extended illustrations of the possible interplay between the *formal* reconstruction of philosophic positions (with their underlying principles) and *dialectical* analysis, on an introductory level. The degree to which schematization versus symbolization is used will vary, as will the pertinence of quantificational versus sentential logic. Some of the sketches are versions of illustrative material or assignments I have used in the course. Some are somewhat idealized reconstructions of the actual course of class discussions that centered around the guided reconstruction of an argument. The appendix contains a set of philosophically-oriented analytic exercises typical of those that the students work on the computer or on their examinations. These sketches are only partially continuous, meant only to illustrate how formal logic might be instructively taught in sustained application to certain crucial tasks of philosophic analysis. I will address this material as I might to my students in order to model how philosophic inquiry might proceed under strict logical constraints. The sample arguments that I use for first introducing students to the rudiments of formal and dialectical analysis are hardly state-of-the-art, but certainly not uninteresting for initiating philosophic inquiry. I take it that the pedagogical reasons for this are obvious.

3. *Philosophic Dialectic in the Framework of Formal Validity*

Scientists typically refute empirical hypotheses by citing *counter-evidence*—ob-
servational instances in which the hypotheses are indisputably false. Somewhat similarly, philosophers standardly refute putative definitions of important concepts (like justice, knowledge, etc.) or general normative principles (such as purport to determine what is right and wrong), by citing counter-examples, instances in which we judge or "observe" that a definition or principle is clearly incorrect. Arriving at a satisfactory definition or principle by a series of successive formulations and counter-examples is one of the most characteristically philosophic of reasoning techniques. Attributed to Socrates, it is often called dialectical analysis.

There is more to this dialectical game than mere refutation by counter-example, since every counter-example is evidence for some alternative or contrary principle(s). Constructive, if critical, inquiry through refutation and reformulation is the larger enterprise. Thus, one function of dialectical analysis in philosophy is to explicate, test, and refine the normative principles that underlie our intuitive judgments and inchoate arguments. The concern here is not unlike that of scientists seeking so-called scientific "laws"; or that of our jurisprudential courts in seeking to interpret and refine principles for the regulation of society.

The procedure of philosophic dialectic, in rough outline, is:

1) to try to capture in explicit premises the intuitions and tacit principles underlying our unreflective arguments about particular cases;

2) to support these premises and principles with clear paradigm cases, cases that are relevantly similar to the case at issue but where we are especially confident of our judgments and their grounds;

3) to adduce the logical consequence of our principles, testing them against putative counter-examples;

4) to reformulate these principles in order better to articulate and accommodate our intuitions about both the counter-examples and paradigm cases before us.

We repeat this process until, ideally, we have rendered our arguments manifestly valid and provided them with fully explicit philosophic principles, principles that are logically consistent among themselves, that accommodate and articulate our intuitions about all the cases so far before us. Our endeavor here is not unlike that of the scientist who wishes his working hypotheses to be consistent with his over-all theoretical framework and to fit or explain all the relevant evidence at hand.

When this dialectical process takes place within the framework of valid deductive argument, revision of our principles will most clearly force revision of either our conclusion or our strategy and line of argument. (See also Section 4.4 for a summary illustration of 'forcing the issue' to this effect.)

Consider the following already explicit argument, apparently in behalf of the permissibility of abortion:13
I have a right to keep people off my property. But you don't violate that right by crossing my land unless I want you not to cross it. In general, A's doing x doesn't violate any of B's rights unless B wants A not to do x. Now no fetus wants anyone not to fatally abort it. (Fetuses just aren't capable of having desires of that sort.) Hence, fatally aborting a fetus doesn't violate its right to life.

The argument as given is virtually valid, and in this minimal sense its conclusion surely "follows." It can be readily reconstructed in its formal essentials:

A-1) For any things A and B and any action x, A does not violate any of B's rights by doing x unless B wants A not to do x.  
A-2) No fetus wants anyone not to fatally abort it.  
Therefore, no one violates a fetus' right to life by fatally aborting it.

If we wish to take issue with the argument, our task is now clearly targeted on either of the two premises. The validity of the argument spares us any vague worries about the 'logic' of the analogy between me and a fetus: we can focus on the substantive issues provoked by the premises.

The illustrative case about my property (to which the unreconstructed argument appeals) is logically gratuitous to the deductive reconstruction above. If premise (A-1) is true, then the claim about my property follows as true. (And if we do not wish to dispute the claim about my property, we can still dispute this premise on any clearly objectionable consequences that we may find in yet other cases.) But in the original argument there was more involved than the essential deductive argument framed above. There was a dialectical move, an appeal to a paradigm case, in support of the general principle (A-1).

If this principle had not been expressly stated in the original argument, we would want, for purposes of philosophic inquiry, to formulate something like it in order to provide both a general explication and a formally valid reconstruction of the position in question. The following analogical argument is neither valid nor explicit about the philosophic principle specially at issue:

B-1) You do not violate my property rights by walking across my land unless I want you not to do so.  
B-2) No fetus wants anyone not to fatally abort it.  
Therefore, no one violates a fetus' right to life by fatally aborting it.

We opt here for valid arguments from explicit general principles in order to promote philosophic inquiry beyond loose analogy or unreconstructed intuition, in order to advance a more general hypothesis about the case at issue, within strict logical constraints. By abstracting general principles from putative paradigm cases, we aim not merely to persuade (by analogy, say), but, further, to capture our tacit, presumably shared convictions about what conditions are necessary or sufficient for deciding other 'like cases alike'.

(B-1) states a paradigm case in support of (A-1) insofar as the case clearly represents those general features that we take to be necessary or sufficient for deciding all relevantly similar cases in the same fashion. (A-1) attempts to explicate what the relevant features are in general. Once we have a general princi-
ple for determining which features of a case provide the relevant grounds for deciding it one way or another, we have, in effect, a hypothesis about our shared norms that we can test against yet other cases. In this way we seek to explicate, extend, and test the analogy posited by (B-1) and (B-2).

A case in which we are uneasy or disagree about the judgment entailed by our principle is a problem case, similar in effect to empirical observations that are difficult to interpret in science or to what are called 'hard cases' in the law. A case in which we are confident that the judgment entailed by our principle is incorrect stands as a putative counter-example against the principle. No principle is adequately specified or acceptable until any pending problem cases or counter-examples have been either accommodated or explained away.

On the other hand, insofar as we can intuitively agree on the disposition of clear paradigm cases, we presumably agree in principle on the disposition of all relevantly similar cases. Any number of persuasively similar cases might be posited in support of principle (A-1):

You do not violate any of my rights by crossing my property, driving off with my car, helping yourself to a beer out of my refrigerator, or even putting me out of my irremedial misery from some terminal disease (Is this case perhaps less clear?) — unless I want you not to do any of these things.

The vague intuition or tacit conviction that is purportedly common to all these cases, the intuition that (A-1) purports to capture, is that there is some connection between our desires and the violation or non-violation of our rights. Presumably we would all agree, and find good reason to agree, that whether or not someone's right is violated has something to do with what he wants others to do or to refrain from doing. Premise (A-1) formulates this connection, in effect, as follows: Someone's having certain desires is a necessary condition of the violation of any of his rights.

This may seem plausible enough in the given cases, but any discomfort about the consequences of this principle (in, say, the case of abortion) may signal that it is not a correct hypothesis regarding the presumed connection between rights and desires. But mere discomfort is not sufficient to remove the principle from contention or show the argument to be unsound. What is wanted is a counter-example that would in turn point the way towards a more adequate principle.

The principle in question is, however, easier to dispute than a mere analogy. We know exactly what would be formally required to refute premise (A-1) because we know formally what a counter-example would look like—namely, a case in which we could agree that: For some persons A and B and some action x, B's right was indeed violated by A's doing x, even though it was not the case that B wanted A not to do x — say, a case where B in fact wants A to do x but A's doing x is nonetheless a violation of B's right. In opting for a case of this sort I give premise (A-1) the benefit of certain doubts and by-pass the most obvious counter-examples: cases where B is asleep, drugged, in a coma or otherwise temporarily relieved of his "normal" desires that, if merely conscious, he would surely have.
In posing the following putative counter-examples I am in effect conducting a thought experiment by which to advance alternative hypotheses regarding the presumed connection between rights and desires. Consider:

_B_ hates _A_ with a passion and wishes for any excuse to do _A_ in. _A_ one day viciously assaults _B_ with every apparent intent of killing _B_. _B_ successfully defends himself, killing _A_ in the process—and thinking all the while that, notwithstanding his fear for his life, he never wanted anything more than to be so viciously attacked by _A_ as to remove all qualms about killing him.

(Are none of _B_’s rights violated by _A_’s murderously attacking him?)

_B_ is a child of nine months who has inherited a large estate. Of course, _B_ knows nothing of wills or estates and consequently has no desires respecting what anyone does with her estate. _A_ is the trustee of _B_’s estate and manages with a bit of illegal but clever finesse to steal considerable sums from same.

(Are none of _B_’s rights violated?)

To the extent that we suspect that rights are indeed violated in either case we want a reformulation of the original principle (A-1), one that better explicates and renders consistent our judgments about all the cases now before us (while perhaps leaving the question about abortion, the case at issue, open). The following principle would at least accommodate our presumed judgment about the original paradigm case and would be consistent with our presumed judgments about the putative counter-examples (while leaving the abortion issue open). This principle thus provides a better fit with all the cases before us, and, so far, a plausible alternative hypothesis respecting the presumed violation or non-violation of rights in those cases:

**Revised Principle (A-1\*)**: Express or tacit consent is a sufficient condition for the waiving or non-violation of a right: If _B_ expressed or otherwise gave consent (perhaps because he lacked certain desires or concerns), then _A_ could cross _B_’s property, or drink his beer, or whatever, without violating any of _B_’s rights.

We might also try here to construct a more comprehensive principle, a more complete account of our sense that while rights are not violated in the original paradigm instance(s), rights are indeed violated in the putative counter-example cases. Perhaps we have a sense that some factors besides or other than the presence of certain desires is necessary or sufficient to the violation of a right. Can you construct a plausible and formally perspicuous principle to such effect? Give it a shot, using any of the following elements, suitably quantified and connected:

**Revised Principle (A-1\**):  
_B_’s rights are/are not violated by _A_’s doing _x_  
_B_ has a/has no right against _A_ that _A_ not do _x_  
_B_ does/does not consent to _A_’s doing _x_  
_B_ has an/has no ‘interest’ in _A_’s not doing _x_  

(One wants to reflect here if rights and their violation are not more appropriately connected with our ‘interests’ than with desires.)
To know just how an alternative principle like (A-1*) or (A-1**) applies in the given cases we may want more facts, as well as further definition of key terms like 'consent' or 'interest'. And the mere fact that such a principle renders plausible (or neutral) but in any case consistent judgments among the given cases does not mean that the principle is indefeasible. But it does put us onto some new notions (like interest and consent) that may play important roles in the analysis of rights and their violation.

We have come far enough in this dialectical foray to make a telling strategic observation about the original line of argument, supposing that we wish now to reject the original principle (A-1). To wit: the revised principle (A-1*) respecting the violation of rights would not be serviceable in the original argument; hence, this line of pro-abortion argument is now at a loss for philosophic grounding. This is apparent as much from our formal as from our dialectical analysis of this line of argument, so far as the correspondingly revised argument is clearly invalid:

A-1*) For any things A and B and any action x,
If B somehow consents to A's doing x, then A does not violate any of B's rights by doing x.

A-2) No fetus wants anyone not to fatally abort it.
Therefore, no one violates a fetus' right to life by fatally aborting it.

We could of course make the argument valid by adding a premise like:

A-3) For any A etc...
If it's not the case that B wants A not to do x, then B consents to A's doing x.

But, even without resort to any particular counter-example, this premise seems obviously to violate our intuitions about what constitutes consent.

If one is nonetheless convinced that abortion violates no rights of a fetus (or that, further, it is permissible), one apparently must—for the sake of plausibility and philosophic grounding—find grounds other than (A-1) or (B-1) for so doing. And if one wants still to appeal to certain incapacities of the fetus in support of abortion, as in premise (A-2), one evidently must—for the sake of validity—appeal to some principle other than our reformulations of (A-1). One has, in any event, to start anew. In the meantime, we have all presumably learned some interesting things about the raw intuitions that originally motivated this line of argument—and about what it takes in general to render a plausible-sounding argument philosophically sound.

4. Reconstructing Arguments Under Deductive and Dialectical Duress

4.1 A Sample Argument for Extended Analysis: The Initial Reconstruction.

Justice surely demands that someone unjustly deprived of something to which he had a right be compensated. Of course, normally, it's wrong to discriminate among job applicants on the basis of racial or sexual
characteristics. But there are exceptions (as to any general rule). Blacks and women, for example, have a right to equal opportunity for advancement in education and employment. Yet both have been unjustly discriminated against in these areas. Not only does justice require that victims of such discrimination and right-violation be compensated, but by hiring blacks and women in preference to white males we do not thereby discriminate in a morally objectionable way. We rather compensate the victims of job discrimination as justice demands.

The foregoing is an argument from alleged requirements of justice. People often appeal to considerations of compensatory justice in defense of preferential hiring. One point we want to make as explicit and precise as possible by constraining the argument in valid form is exactly what justice is supposed to require, and on exactly what grounds.

Reconstructing this line of argument in deductively valid form will not produce some single argument or principle of justice: many valid reconstructions are possible employing any one of several possible formulations of the alleged requirements of justice. But by constraining the argument in deductively valid form we force ourselves to specify some principle explicitly connected to the policy in question. This begins the dialectical program of successive reconstructions of the principle to take account of objections to it, and successive reconstructions of the argument providing the logical connection between the principle and the policy of preferential hiring. Any simple, initially plausible formulation of the argument will do for starters. Whatever formulation we begin with, it can be made progressively more precise under the fire of counterexamples and within the constraint of deductively valid form.

Consider the following generalized reconstruction of the argument. Suitably replacing 'X's' by 'blacks' or 'women' and 'Y's' by 'whites' or 'males' will render the intended conclusion of the original argument. In brackets I will assign a variable letter to each atomic sentence schema in the argument so that its underlying sentential-logical form can be readily depicted for starters.

A) 1) If [O] X's have been unjustly deprived of something (e.g., equal employment opportunity) to which they had a right, then [J] justice demands that X's be compensated
   2) [O] X's have been unjustly deprived of something (i.e., equal employment opportunity) to which they had a right
   3) [M] Preferential hiring of X's over Y's is on balance morally permissible if [S] preferential hiring of X's serves to compensate them as victims of job discrimination

Therefore: [P] Justice demands preferential hiring of X's over Y's

There are at least three problems with the argument as stated that come out in the course of reconstruction. First, whatever quarrel one might have with the accuracy of the initial reconstruction (A) (anyone may try his own), one can see that the logical form of the argument is, in any case, not manifestly valid: the conclusion does not follow. There are important unstated assumptions. Senten-
tial logic will suffice, for starters, to find and fill the gross logical gaps in the argument. Second, the argument is rife with ambiguity. Third, once one has sorted out some of the ambiguity, it turns out to be remarkably difficult to reconstruct the argument so that it both is valid and has all true or plausible premises, premises at least immune to obvious counter-example. From these lessons of formal reconstruction philosophic lessons are also to be learned. I will deal with them in turn.

4.2 The First Problems: Invalidity and Missing Premises

The argument as it stands is invalid. This is easily seen by inspection of its logical form, abstracted symbolically:

\[\begin{align*}
A') & \quad 1') \text{ If } O \text{ then } J \\
2') & \quad O \\
3') & \quad M \text{ if } S
\end{align*}\]

Therefore: \( P \)

One advantage of being able to depict the logical form of an argument in abbreviated notation is analogous to the advantage of having an x-ray device: it allows us to focus on the bare skeletal structure apparently supporting the conclusion, to detect distinctly structural flaws underneath the enveloping verbal flesh and musculature. From our initial x-ray of argument (A) it's clear that the conclusion \( P \) is in no way explicitly connected to any of the stated premises. Nor is any explicit connection between premises (1) and (2) and premise (3) yet apparent: from (1) and (2) we can conclude \( J \); but what connections are presumed to exist among \( J \), premise (3), and the conclusion \( P \)? These connections, in some form, must be made explicit, so as to make explicit use of the stated premises of the argument and also render it valid. Here we need to consider the content as well as the form of the argument.

Symbolic logical form and validity serve, respectively, as clues and guiding constraints in the search for tacit premises; but they are not sufficient grounds for generating sensible additional premises, or for deciding among competing premises where any number might make an argument valid. It is necessary to introduce other guiding constraints in the reconstruction of an argument. Validity remains a powerful minimal condition of the enterprise nonetheless: insisting on manifest validity keeps us honest about what exactly is or must be assumed and exactly what follows from what. In this case it requires us to produce some further assumptions on which the conclusion tacitly rests. Once laid out explicitly, these assumptions are open to question; and this may force us to change the shape of the argument or even abandon it. One obvious tacit assumption is:

\( R: Y' \)'s (white males) have received undue preferential treatment over \( X' \)'s (blacks or women in hiring practice).

Without assuming at least some such condition it would make no sense to assert that it is morally permissible to compensate \( X' \)'s at the expense of \( Y' \)'s. Moreover, without the addition of some such condition as \( R \) to premise (3), this
premise is open to obvious counter-example and, so far, is false. That is, in
general, the truth of S is not always a sufficient condition for the truth of M,
for surely the following interpretation of premise (3) is false:\textsuperscript{15}

If preferential hiring of Mexican-Americans (X's) compensate them...then
preferential hiring of Mexican-Americans (X's) over blacks (Y's) is morally
permissible.

The logical form of our further reconstruction now looks like this, where our
added premises are indicated with an asterix:

\begin{align*}
A' & \quad 1') \text{ If } O \text{ then } J \\
2') & \quad O \\
\text{Therefore: } & \quad J \\
3') & \quad \text{If } S \text{ and } R, \text{ then } M \\
4') & \quad \text{If } R \\
\text{Therefore: } & \quad P \\
\end{align*}

Explicitly assuming the condition S as an additional premise:

\begin{align*}
5') & \quad S \\
\text{we may draw the further intermediary conclusion: } & \\
\text{Therefore: } & \quad M, \text{ from (3'), (4') and (5')} \\
\end{align*}

We have now come so far as to conclude that (J) justice demands compen­
sation and that (M) preferential hiring is on balance a morally permissible way
to compensate. We have yet explicitly to complete the connection to the
ultimate conclusion (P) to the effect that justice in turn demands preferential
hiring as the mode of compensation. Any of the following additional premises
connecting the conclusion to the foregoing results would render the argument
valid:

\begin{align*}
6' & \quad \text{a) If } J \text{ and } M, \text{ then } P \\
& \quad \text{b) If } J \text{ then } P \\
& \quad \text{c) If } M \text{ then } P \\
\end{align*}

Both (b) and (c) are objectionable, on similar grounds. That (J) justice
demands compensation is not sufficient grounds for asserting that (P) justice
demands that compensation take a particular form, namely, preferential hiring.
That (M) preferential hiring (or anything else, say, singing in the shower) is on
balance morally permissible is not sufficient grounds for holding that (P)
justice requires it. So, (b) and (c) are, when generalized, implausible or false.
Moreover, their addition to the argument, while making it valid, would be to
cast adrift other presumably relevant premises as logically superfluous.

It seems the best of the three alternatives is (6')(a). Choosing it has been an
exercise in the reconstruction of a normative principle, an attempt to specify
sufficient grounds on which justice would require and, so, justify a particular
policy. The reconstruction of principles and the reconstruction of arguments go
hand-in-hand in the moral-philosophic forum, because normative principles are
always among the (stated or tacit) assumptions of a moral-philosophic argument. Hence, the reconstruction of arguments can play a heuristic role in the explication and analysis of the normative principles underlying our reasonings.

Once the argument, with its tacit underlying principles, has been reconstructed in valid form, we are at least assured that if the premises are acceptable, so must be the conclusion. But are they?

4.3 Further Problems: Ambiguity and Defeasibility of Premises

For purposes of illustration, I will focus on the first premise of the argument only. Where ambiguities are discerned or counter-examples found, premises must be reformulated, jettisoned, or added. Premise revision involves further, alternative reconstructions of the argument to preserve its validity. This may be difficult, but to that extent instructive.

Consider: The principle of compensatory justice to which argument (A) appeals, premise (A-1), can of course be applied quite generally. So, the original line of reasoning and the policy based on this principle can be applied quite generally. How generally? To whoever can be counted among the X's. Who might be counted among the X's? On grounds of premise (A-1), presumably anyone who has ever been deprived of something to which she had a right, say 'equal' employment opportunity. (He could well be a highly competent white bank executive from a wealthy family who has been denied 'equal' consideration for jobs many times because of his religious or political views.)

There is a serious ambiguity in premise (A-1). How are we to interpret the demand for compensation of X's? There are at least two possibilities where X's are members of some identifiable group:

A distributive interpretation: a person is to be compensated if that person is an X (black, woman, atheist...) and that particular person has been unjustly discriminated against...

A collective interpretation: a person is to be compensated if that person is an X and X's (blacks, women, Irish-Catholics, communists...) have in general been unjustly discriminated against...

The collective interpretation of the demand for compensation for X's does not require that any given X have been unjustly discriminated against, but rather that other X's as a group have been unjustly deprived: under this interpretation X's as such are to be compensated.

A wealthy Jewish or Irish Catholic businessman who had never himself been deprived of anything could qualify under the collective interpretation for compensation where X's were Irish Catholics or Jews. A wealthy white male who had himself been unjustly discriminated against because of his atheism could qualify for compensation under a distributive interpretation. Presumably the purpose of the preferential hiring policy in question is neither to compensate wealthy people nor to compensate just anybody for any unjust deprivation she may have suffered. Under either interpretation the general demand for compensation could be applied to practically anybody; whereas the specific de-
mand for compensatory preferential hiring is on behalf of certain presently and
unfairly disadvantaged groups, namely, certain racial minorities and women.

We need to specify the conditions of premise (A-1) so as to justify compensatory
treatment in the form of preferential hiring for all and only those whom
the policy is meant to compensate. For a sense of these two possibly conflicting
constraints—the justice and the purpose of the policy in question—we need ap­
peal to our intuitions, our tacit conceptions of both, as yet imperfectly captured
in premise (A-1) (and yet to be tested against limiting counter-examples).

We need first to specify more precisely the grounds on which justice
demands compensation. We will consider five candidate criteria. These will be
sufficient to delineate some of the major ambiguities of our original principle
of compensatory justice. Consider, then:

a) Membership in a group whose members have been widely and unjustly
discriminated against and thereby deprived of something to which they
had a right.

This criterion would qualify blacks and women, but would it qualify all
and only those actually deserving compensatory treatment? As already sug­
gested, it would not. The criterion is too inclusive. Who would not qualify for
compensation? Consider the cases of well-to-do Catholics, Protestants or Jews
who have never been unjustly deprived of anything but who are members of
groups which have (somewhere) suffered great injustice. Does justice require
that they be compensated?

It is evidently not mere membership in some identifiable class of persons
many of whose members have suffered injustice at some time in the past that
recommends a given member for compensation. Yet the policy we are seeking
to justify on the basis of the requirements of justice designates its beneficiaries
according to racial or sexual characteristics.

Perhaps it is rather the likelihood of having herself suffered injustice,
given effective, recent and widespread prejudice and discrimination against X’s
as such, that recommends any given X for compensatory treatment:

b) Likelihood of having suffered unjust deprivation oneself because of
membership in a group whose members have been recently and widely
discriminated against.

This criterion would include blacks and women and exclude consideration
of white Catholics or Jews for compensation. But against this suggestion stands
the case, however unlikely, of any well-to-do black woman who has never been
deprived of anything. Does justice demand that a person who has never suf­
fered any injustice be compensated? What is it for which she would be compen­
sated? Analogously, should courts award compensatory damages to a person
on the likelihood that he suffered defamation of character when in fact he has
not—or because it is established that he was actually wronged and harmed in a
way penalizable by law? The latter case is more problem-case than counter­
example. Consider then:
c) Having in fact been unjustly discriminated against and thereby deprived of something to which one had a right.

Whatever justice demands in the way of compensation, it would seem that justice demands it only for persons who have *themselves* been unjustly harmed or deprived, *not* for persons who have not in fact been wronged but who happen to have certain characteristics (e.g., race) in common with others who have.

But while actually having been wronged oneself may be a necessary condition for claiming compensation on grounds of justice, this requirement of justice would not justify preferential hiring of blacks or women as such. Nor would a principle stipulating criterion (c) as a sufficient condition for compensatory treatment justify preferential hiring of all and only those (certain minority groups and women) whom the policy seems intended to benefit. Such a principle would justify compensatory treatment of a person irrespective of her race, sex or socio-economic status. And a policy of preferential hiring based on such a criterion, designating beneficiaries according to their personal histories rather than race or sex, would seem to be impracticable and, in any case, different from the policy in question.

There are further ambiguities in the original principle that I will defer to the next section. One instructive difficulty with the line of argument under consideration has already clearly emerged in our reconstructive effort: the problem of *fitting* (logically connecting) the desired policy (compensatory preferential hiring of certain racial minorities and women) to the requirements of justice that seemed initially to demand such a policy. The grounds on which justice might demand and distribute compensation are not obviously the grounds on which the policy in question would designate its beneficiaries.

A fairly superficial examination of the ambiguities of our initial formulation of what justice requires has produced a fair array of questions. Nevermind objections to other premises in the original argument for now. We find that the alleged requirements of justice are themselves clearly questionable. We can map out the issues and strategic options confronting us by reformulating the original deductive argument to take account of the ambiguities and objections raised. Because these difficulties have arisen from our attempts to *generalize* the original principle, premise (A-1), of the argument, it will be convenient to try to capture its generality and ambiguity more explicitly in the framework of quantificational logic, in Section 4.4. (In the course, I use this sort of example and rationale for motivating the transition to quantificational logic.)

Attempting to reconstruct the argument in expressly valid form, while taking account of ambiguities and counter-examples, makes the philosophic problem of fitting the desired policy to the demands of justice more acute. While this reconstructive exercise may well make the argument less persuasive, the exercise is nonetheless instructive regarding some of the philosophic issues underlying the policy in question. This is one educational objective of the task of reconstructing arguments in deductively valid form, and one rationale for my CAI programs in argument reconstruction, which enforce the constraint of
validity while allowing the students to view and easily manipulate both the logical form and the content of an argument side-by-side.

4.4 Forcing the Issue: The Straits of Scylla and Charybdis

Philosophic analysis within the constraint of manifest validity, the attempt to avoid both invalidity and counter-examples, is a bit like trying to negotiate the straits of Scylla and Charybdis of Greek myth. We might also think of this endeavor as a kind of game, albeit a serious one. The object of this game is to construct an evidently sound argument (one that both is manifestly valid and has evidently true premises) supporting the policy of preferential hiring in question, on the basis of the requirements of compensatory justice. The first phase of the game is to construct a deductive argument whose conclusion is the position on the policy in question by selecting those premises required to make manifest the validity of the argument. The second phase of the game is to test the truth and plausibility of the selected premises, by explicating ambiguities and adducing putative counter-examples or problem-cases. A given premise remains evidently true or plausible only so far as it is at least immune to obvious counter-examples. Our two concerns are the logical connection between premises and conclusion, a matter of logical form, and the truth or plausibility of the premises, a function of their actual content and the argumentative context. As we shall see, these concerns are not unrelated in the game of argumentative strategy that follows. It is often very difficult to satisfy both constraints at once. In this respect deductive validity, a matter of logical form, is indeed related to ‘the pursuit of truth’ as well as to argumentative strategy. Where the task is apparently impossible, we have good reason to abandon an argument and seek alternative strategies.

Consider now a multiple-choice reformulation of the original argument from justice, argument (B), below. Premises may be constructed by selecting one (or more) of the lettered options (and providing suitable logical connectives). The options (a)-(e) given under each premise are intended to take account of ambiguities detected in the principle of justice employed in the original argument (A). At this stage of reconstruction it is useful to have recourse to quantificational logic. The logical form of each premise is symbolized to its right so that validity can be readily assessed by inspection or derivation.

1) If a person X:
   a) is a member of a group whose members have been widely and unjustly discriminated against and thereby deprived of something to which they had a right,

      \[(x)(Mx \rightarrow Jx)\]

   b) is likely himself to have been unjustly discriminated against and thereby deprived of something to which he had a right,

      \[(x)(Lx \rightarrow Jx)\]

   c) has in fact himself been unjustly deprived of something to which he had a right,

      \[(x)(Fx \rightarrow Jx)\]

   d) has himself suffered harm or serious disadvantage as a result of having been unjustly discriminated against,

      \[(x)(Sx \rightarrow Jx)\]
e) presently is suffering harm or serious disadvantage as a result of having been unjustly discriminated against;
Then justice demands that that person $X$ be compensated.

2) All women:
   a) are members of some group whose members have been widely and unjustly discriminated against and thereby deprived, $(x)(Wx - Mx)$
   b) are likely to have been unjustly deprived, $(x)(Wx - Lx)$
   c) have in fact been unjustly discriminated against and thereby deprived, $(x)(Wx - Fx)$
   d) have suffered harm or serious disadvantage as a result of having been unjustly discriminated against, $(x)(Wx - Sx)$
   e) are presently suffering harm or serious disadvantage as a result of having been unjustly discriminated against, $(x)(Wx - Px)$

Therefore: Justice demands that women be compensated $(x)(Wx - Jx)$

We are considering now just the first stage of the original argument, to the first intermediate conclusion that justice demands compensation for, say, women. Nevermind what form compensation should take. If we cannot construct a valid and plausible argument to this intermediate conclusion, we can hardly justify the policy in question on the basis of the original line of argument from compensatory justice.

There are at least five different sets of premises, consisting of alternative versions of premises (1) and (2), that will each provide a valid argument to the first conclusion. They are: (1a), (2a); (1b), (2b); (1c), (2c); (1d), (2d); (1e), (2e). The list could be lengthened by including sets of compound premises, such as: (1e or d), (2e). However, as it happens, nothing would be gained thereby. Keeping in mind the questions raised previously regarding criteria (a) through (c), consider the arguments resulting from these sets of premises. Which of the optional arguments is most evidently sound? As it happens, none is sound (i.e., none both is valid and has all its premises immune to obvious counterexample).

Conditions (1c), (1d) and (1e) seem to provide the most plausible grounds for justice to demand compensation, namely: that a person particularly has suffered an injustice, or harm as a result of injustice, in order that the person actually have something to be compensated for. The difference between (1c) and (1d) or (1e) concerns whether we wish to compensate persons who were in fact treated unjustly but who suffered no harm or disadvantage on that account. Is it the mere fact of injustice or rather the resultant harm that demands compensation? If the latter, is it present or past harm?

By contrast, condition (1a) seems an implausible basis for justice to demand anything, let alone compensation. Mere membership in a group does not suffice to establish that a person suffered any injustice. If a person suffered no injustice, what is she to be compensated for? Some further condition seems
necessary to establish an evidentiary connection between group membership and injustice. (1b) makes one likely condition explicit, asserting a probable connection. The implausibility of (1a) can be shown by an appeal to the untoward consequences that would result from its general application: cases where justice demanded compensation but where there was no victim of injustice to be compensated. The same objection could be lodged against (1b), with even hypothetical counter-examples. (Why hypothetical 'evidence' should count here is an interesting issue to pursue in class.)

In sum, whereas premises (1c), (1d) and (1e) provide plausible grounds for justice to demand compensation, the corresponding factual assumptions respectively required to entail the desired conclusion are very likely false. On the other hand the factual assumptions (2a) and (2b), while true, seem to provide insufficient grounds for justice to demand compensation, as shown by counterexamples to (1a) and (1b) above.

If we revise this premise of the argument in order to demand compensation, discriminately, for only those (blacks, women or X's) who qualify on conditions (1c), (1d) or (1e), we would vitiate the validity of the original argument to the conclusion that calls for compensation for all blacks or women as such. If we also revise the final conclusion, to preserve validity, and thereby discriminately demand preferential hiring for only those who qualify on conditions (1c), (1d), or (1e), we cannot justify compensatory hiring of all blacks and women as such. We would then be arguing for a very different, and probably impracticable, policy. The difficulty is to provide a manifestly valid argument with plausible premises to the specified conclusion. This difficulty would be compounded if we were to examine other premises in the original argument. More subtle refinement or reformulation of the premises will not eliminate this basic difficulty. We have reached an apparent impasse in our game of argument reconstruction. There are some lessons of argumentative strategy to be gained at this impasse.

It is not obvious that an appeal to the requirements of compensatory justice is, after all, viable in behalf of preferential hiring of blacks, women or other minority members as such. This has been shown by making certain alternative connections between the policy and the presumed requirements of justice explicit in valid deductive form. Making the supposed logical connections between policies and principles explicit in this way forces us to clarify our normative assumptions and provides us with clear departure points for further dialectical analysis in disputes about matters of principle and policy.

We also get clearer on exactly what position we want or need to hold on the policy in question. When we reach an impasse such as we have in our appeal to compensatory justice, we would be well-advised at least to consider other lines of argument. Perhaps appeal to notions of distributive justice, or mere compatibility with the requirements of justice and an appeal to 'social utility' would suffice to support the policy in question. Perhaps the correction of certain social ills (disproportionate poverty, unfair competitive disadvantage, or unemployment among certain minorities) or the provision of certain social
benefits (positive role models and career incentives) is the proper aim of the policy in question. Perhaps these ends, if achievable with negligible infractions of justice, would justify preferential hiring of blacks or women as such. Perhaps. This, in any case, is a strategy different from the one with which we began. To get clear on exactly what would have to be true in the way of both normative and factual assumptions in order to support preferential hiring along these lines we would do well to make those assumptions explicit within the frame of a valid deductive argument.

And the game of argument reconstruction and counter-example would resume. A game that is, after all, a serious form of philosophic inquiry within strict logical constraints.

Appendix

Sample Exercises in the Formal Explication of Arguments and Principles

Of the following five sample exercises Problems 1-3 are taken from a problem set for the computer-assist program (called ARGUE) that guides argument reconstruction and deductive derivation (by means of hints and a proof-checker). Problems 4 and 5 are sample examination questions, which could also be entered and worked through using the ARGUE program's proof-checker and its ability to represent the symbolized form of an argument and its English translation side-by-side. While formal reconstruction, symbolization, and derivation are central to these problems, it should be evident that they also involve tasks in philosophic and dialectical analysis. Difficulties of interpretation encountered in symbolization are often philosophically germane. Problems 1-3 involve supplying missing premises, constructing general principles (specifying necessary or sufficient conditions) of legitimate social constraint, and assessing the plausibility of principles by deriving their logical implications for given cases. These problems are based on chapters two and three of Joel Feinberg's Social Philosophy (Englewood Cliffs, NJ: Prentice-Hall, 1973). Problems 4 and 5 involve similar tasks and relate specifically to John Stuart Mill's On Liberty and an actual case of controversial paternalism (which I have called 'the Williams case'). We use Mill and an assortment of such problem cases as the basis for seeking a system of plausible and consistent principles of legitimate social constraint—again, within a framework of strict formal-logical constraints. (The justifiability of the latter qua social-intellectual constraints also happens to be topical to the course.) These problems are dialectically related in ways that should be evident.

Problem 1. Is preventing serious hurt to others the only legitimate ground for justifying coercion or prohibition by law? Is hurt the only form of harm?

Advertising the pleasures and techniques of sodomy on a large billboard in Times Square is surely offensive even if it's not hurtful to anyone. But if preventing serious hurt to others is the only legitimate ground for justifying prohibition by law, then what is offensive but not seriously hurtful may not be prohibited.

Symbolize the stated and any additional premises required to derive, by reductio ad absurdum, the conclusion that serious hurt to others is not the only ground for legitimate prohibition by law.

Let: a = the act of advertising sodomy in public
Lx = x may legitimately be prohibited by law
Hx = x is seriously hurtful to others
Ox = x is offensive to others
Problem 2. About my skinning my dog alive—when it's done secretly, say, in the privacy of my basement, it is neither hurtful to other people nor offensive to people. So, although it is morally outrageous, my skinning my own dog alive may not be legitimately prohibited by law so long as it's done secretly.

Symbolize the stated and additional premises required to derive the conclusion of this argument. Then do the derivation. One of the missing premises is a tacitly assumed principle of legitimate prohibition: you must specify the conditions that it assumes are necessary or sufficient for justifying legal prohibition such that my skinning my dog alive should not be prohibited.

Let: \( a = \text{my skinning my own dog alive} \)
\( L = \text{may legitimately be prohibited by law} \)
\( H = \text{is hurtful to other people} \)
\( O = \text{is offensive to other people} \)
\( M = \text{is morally objectionable} \)
\( S = \text{is done secretly} \)

Problem 3. We would like a principle of legitimate social coercion that spelled out both the limiting and justifying—necessary and sufficient—conditions of this 'necessary evil'. (Note: A more creative problem of this sort would normally come after several more dialectically related problems like those above.)

Construct and symbolize a principle such that:

1) Your principle states what you now take to be the more plausible candidates for necessary and/or sufficient conditions of legitimate social coercion, chosen from among the candidate conditions (L through P*) below. Your principle will state, in effect: Only and/or all actions that are ______ may legitimately be prohibited, where you are to fill in the blank. Your principle may certainly posit conjunctive or disjunctive conditions.

2) Your principle has, together with plausible additional assumptions that you state as explicit premises, the logical consequence that certain specific and presumably bad actions or practices \( a \) and \( b \) may legitimately be prohibited (you choose the examples) and that certain other presumably permissible actions \( c \) and \( d \) may not be prohibited. Use the assign command to assign your chosen cases a constant (for example: \( a = \text{addictive drug abuse} \)) for purposes of using the English command to obtain translations of your symbolized principle and the derivation of its consequences in your chosen cases.

Derive the consequences of your principle for your chosen cases (and be prepared to argue the plausibility of your principle against possible counter-examples in class).

Let: \( L = \text{may legitimately be prohibited} \)
\( H = \text{is hurtful to other people} \)
\( O = \text{is offensive to other people} \)
\( M = \text{is morally objectionable by current public standards} \)
\( P = \text{is harmful or hazardous to the agent him/herself} \)

Problem 4. A Problem Case in Point: Williams

Williams would like to be released from the hospital to which he was taken a year ago after an automobile accident (explosion) left him blind, unable to use his hands or legs, and with deforming burns over 80% of his body. His burns have not healed; if he is released from the hospital and allowed to go home, infection will set in and he will die. But Williams, who has been declared sane and mentally competent by the hospital psychiatrist, wants to die. Before his accident he enjoyed skiing, motorcycle racing, hang-gliding, and scuba diving. Blind and crippled, he will no longer be able to engage in these activities. Nor will he be able to resume his career as a real-estate broker. At
age 27, Williams does not look forward to the kind of life he *will* live; on top of that, he
does not like the life he *does* live. Each day he suffers excruciating pain when his entire
body below the neck must be submerged in a chemical bath as treatment for his burns.
The process of removing old and applying new dressings to his wounds is also
exceedingly painful. Pain medications are of little help. Williams believes that even if he
could adjust to life as a blind man and a cripple, going through the burn treatments for
the sake of *that* life prospect is not worth it. His doctor, with the support of the
hospital, is refusing to allow Williams to be removed from the hospital by his family or
by hired transporters. The reason is this: The doctor believes that Williams will one day
be glad that he was not allowed to die. (Cf. Mill on 'general presumption'.) It is true, as
a matter of fact, that the vast majority of burn patients want to die while they are in the
hospital, but when the treatments are over they are thankful that they were not permitted
to have their own way, and that they are still alive. Williams has sought a court
decision on his case; he believes the hospital has no legal right to keep him under its
protection, especially since on the scene of the accident he requested that he not be
taken to any hospital.16

One exception to Mill's anti-paternalistic presumption that a mature individual
should be considered the best judge of what's in his best interests is, according to Mill,
"when he attempts to decide irrevocably now what will be best for his interest at some
future and distant time. The presumption...is only legitimate where the judgment is
grounded on actual...present experience; not where it is formed antecedently to [relevant]
experience." We might recall here Mill's view on the justifiability of coercive
paternalistic constraint in the case of selling oneself into slavery (something that could,
like death for Williams, appear ever so much more attractive than life in one's present
and foreseeable state).

We might paraphrase this principle as follows: When a person's decision will prove
irrevocable, he should *not* be presumed the best judge of what's in his best interests
unless he both knows the far-reaching consequences of his decision in plain fact and
has the experience to appreciate these consequences and weigh them against those of
alternative courses of action.

Now, while Williams has been informed of the likely long-term benefits of contin-
uining in treatment and while he knows full well the fatal consequences of discontinuing
treatment, we might nonetheless argue on the basis of the above principle that Williams
should *not* be presumed to be the best judge of what is in his best interest.

Symbolize the general paternalistic principle paraphrased above and additional
premises (plausible in the Williams case) that will allow you to derive the conclusion
that Williams should not be presumed the best judge of what is in his best interests
regarding treatment. Then derive this conclusion.

Let: a = Williams; d = the act of discontinuing Williams' treatment

1. $x \Rightarrow y$ is presumed to be the best judge of whether $y$ is in his best interest
2. $x \Rightarrow y$'s decision to $y$ would prove irrevocable and far-reaching
3. $x \Rightarrow y$ knows the far-reaching consequences ('costs' versus benefits) of $y$ and alter-
native courses of action
4. $x \Rightarrow y$ has the experience to appreciate, weigh and balance the far-reaching conse-
quences of $y$ against those of alternative courses of action

Problem 5. Consider the following paternalism principle and the story accompanying it
below:17

Paternalism Principle (PP). It is morally permissible for a person $x$ to force a
person $y$ to perform an action $z$ if, and only if, $y$ will violate someone's rights
by not doing \( z \) or it is the case both that \( x \) with good reason believes that doing \( z \) is in \( y \)'s best interest and \( x \) either has important information that \( y \) lacks about the consequences of not doing \( z \) or has good reason to believe that, were \( y \) calmly to deliberate about being forced to do \( z \), \( y \) would agree to have \( x \) force him to do it.

The Case of Nick and Tina. Nick, while addicted to cigarettes, is extremely considerate of others. Outside of his own home he smokes only when those around him have consented to his doing so. But, when he smokes, he smokes very heavily. He knows that smoking is very bad for him and he would like to quit. However, though he has tried more than once to stop, he has not succeeded. Tina, a close friend of Nick's, can't understand why he continues to befoul his system and stain his fingers, teeth, and lungs with tobacco residue. She and Nick have talked about the matter many times. And, in a recent discussion she has told Nick that she intends to do whatever necessary, even lock him in his own apartment for a week, in order to simply make it impossible for him to get any cigarettes. In response, Nick firmly told Tina that he did not want her to force him to kick his habit even if she could guarantee a 'cure' thereby. He appreciated her concern, but the problem was one that he felt he had to handle on his own, even if his own efforts should end in failure.

Symbolize Principle PP.

Symbolize three additional premises that are plausible to assume in the given case and will allow you to derive the conclusion that it is not morally permissible for Tina to force Nick to stop smoking.

Derive the conclusion, being sure that none of your premises are superfluous.

Let:  
\[ a = \text{Nick the cigarette addict} \]  
\[ b = \text{Benevolent Tina} \]  
\[ c = \text{Nick's cutting out cigarette smoking} \]  
\[ F_{xyz} = \text{It is morally permissible for} \ x \ \text{to force} \ y \ \text{to do} \ z \]  
\[ R_{yz} = \text{will violate someone's rights by not doing} \ z \]  
\[ G_{xyz} = x \ \text{with good reason believes that doing} \ z \ \text{is in} \ y \text{'s best interest} \]  
\[ L_{xyz} = x \ \text{has important information that} \ y \ \text{lacks about the consequences of not doing} \ z \]  
\[ H_{xyz} = x \ \text{has good reason to believe that, were} \ y \ \text{calmly to deliberate about being forced to do} \ z , \ y \ \text{would agree to being forced (by} \ x \ ) \ \text{to do it.} \]
because one wants a formal logic of at least this power in order to see what all the fuss is about in debate over the desirability of a 'formalist' ideal in logic. To understand the case for departing from classical formal systems—or from formalism entirely—one needs to understand the power and limits of at least first-order logic. This much background in classical logica docens is wanted if only to appreciate the examples used in discussions of the merits of formalistic bents in logic. I think that this much of the 'philosophy of' logic is something any student of logic would do well to appreciate. See, for example: Woods and Walton's "More On Fallaciousness and Invalidity," Philosophy and Rhetoric, 14 (1981), 168-72; and Philip E. Davis' review of Ilmar Tammel's Modern Logic in the Service of the Law, in Ethics, 91 (1981), 671-2. Needless to say the arguments one can analyze with interesting results using only sentential logic are probably rather limited in both number and philosophic interest. For first-order logic the range of instructive possibilities is arguably quite large.


10. For what it is worth: In spite of the facts that the course is required of all our freshmen, the classes large, and most of the students shy of both computers and formalism, the course and CAI programs each get a respectable 4.2 on student evaluations, where a 5 is the highest rating on the scale and 3.6 is average for required courses. The computer-based logic is consistently designated the most valuable aspect of the course by most students, even over the philosophic topics and texts. With improvements in the curriculum and integration of the CAI programs, average scores on standard mastery examinations improved by one grade level in the fall of 1980 over the previous year.

diverse works to methodologically-minded philosophy teachers for the perspective on common methodological issues among logic, science, law, and philosophy which, taken together, they provide. I have found the pragmatist thread running through these works to be a very helpful line to take in giving a methodological account of dialectic and the apparent *modus operandi* of much of analytic philosophy, especially in moral-philosophic dispute, in terms of analogies with the philosophy of logic, science, and law.


13. I use this argument to introduce the deductive-dialectical enterprise because of its initial plausibility (to many students) and yet its clear vulnerabilities. With the moves of the game thus defined, we can then go on to consider Michael Tooley's more elaborate argument in "Abortion and Infanticide" and Judith Thomson's alternative pro-abortion strategy in "A Defense of Abortion." Both articles are included in Marshall Cohen, et al., eds., *The Rights and Wrongs of Abortion* (Princeton, NJ: Princeton University Press, 1974). Tooley's argument is replete with provocative dialectical moves and is already formally perspicuous enough to require little ingenuity in deductive reconstruction, although it is a rather torturous if instructive exercise in the reformulation of principles. Thomson's argument, on the other hand, while dialectically perspicuous, is not formally explicit and wants some effort at reconstruction. This is an interesting exercise for the class because, among other things, the logical status of Thomson's assumption that the fetus is a person with a full-blown right to life is not obvious: Is it to operate as a premise in her argument for abortion? Wouldn't it be odd to support such a position on the basis of the fetus' right to life? Or is it to be regarded as something else, a background assumption, say, or one granted 'for the sake of the argument'? What/which/whose 'argument', and to what effect? Just what is its role in Thomson's enterprise? These are interesting questions to pursue to show that any theory of argumentation goes well beyond the theory of deductive validity.

14. In formulating the general principle, the 'weaker' interpretation of ‘...unless...’ as, in effect, ‘*not...only if...*’ seems more reasonable than the 'stronger' ‘*not...if and only if...*’ or ‘*not...if...*’ because the latter would allow that my rights were violated by someone's doing something just because I wanted him not to do it. In the particular instances given, however, it would be tempting and plausible to opt for the latter 'stronger' interpretations because of the presupposition that I do indeed have rights respecting my land, beer, car, and life. A more fully explicit principle (like A-1*, below) would make this presupposition of the given cases an express condition of the violation of any rights. This is an example of how a little *formal* perspicuity in the statement of a principle can affect its substance and force the explication of contextual presuppositions. One strategic advantage of the original valid argument is that it could dispense with presuppositions about what rights a fetus or whatever holds, and thus skirt the issue of whether a fetus has a right to life.

Cf. note 1 in my article “Logic and Liberal learning” (in this volume) on the interpretation of 'unless'.

15. I could well be accused of begging questions about the propriety of treating moral propositions as 'true' or 'false'. I believe that they can be so treated, and give some explanation for this treatment in my course. So I would prefer to think that I am merely begging off on a discussion of this matter here, for reasons of space constraints. But this is a serious issue to be brooked in applying truth-functional logic to the
analysis of the validity of moral or other arguments where deontic concepts or modal terms operate. For a recent critical commentary on this enterprise, see Philip E. Davis' review of Ilmar Tammelo's *Modern Logic in the Service of the Law*, in *Ethics*, 91 (1981), 671-2. It should be clear that I am not advocating classical first-order logic as the logic of moral argument, or as a sufficient apparatus for analyzing moral argument, or as the only formal apparatus that could be brought fruitfully to bear on the analysis of moral arguments. When push comes to shove on issues involving deontic terms, I aver with Baruch Brody that further analysis of the argument in question "Depends upon further research in deontic logic." Cf. his final chapter in *Logic: Theoretical and Applied* (Englewood Cliffs, NJ: Prentice-Hall, 1973), in particular pp. 272-6. But before this issue is forced, much can be accomplished within the confines of classical theory. And I would hope that my illustrations bear this point out.

16. I am indebted to my former colleague Anita Allen for finding and writing up this case for use in the course. An actual case and not a mere 'thought experiment', it provides a rich source of factors not explicitly accounted for in, say, Mill's principles or discussion of paternalism. Another advantage of this particular case is that there exists a gruesome and poignant documentary film to bring the issues that elude neat formalization home to the students. In this way we attempt to catch the students between the 'rock' of a hard case and the 'hard place' of having to formalize their working hypotheses or principles regarding what should be decided in such cases. The 'Williams' case is also an interesting one to use because the institution that originally controlled the lease on the film will not release the film, because of its truly painful impact, for use in freshman classes. Thus, control of the film of the case is itself a pertinent problem case under the topic of paternalism—and one that bears directly on the students themselves: the class can be asked to help deliberate a policy for showing the film.

Of course, I would ask the students each to present me with a valid argument regarding a policy for the showing of the film, one based on an arguably plausible principle of paternalism. We would then discuss the merits of representative arguments and their principles. Before deciding on the showing of the film for any portion of the class, I would insist that the class as a community unanimously agree to the soundness of some argument for the policy as well as to the policy itself. I intend to try this ploy in communitarian dialectic this next year.

17. I am indebted to my colleague Jonathan Pressler for this problem from an examination for one of his sections of the course.

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