About the methods of philosophical inquiry little consensus can be achieved. If, however, we attempt to separate issues of methodological substance from issues of philosophical style, there are a few points about the former on which general agreement might be reached. Probably the most fundamental of these is that philosophical views or positions require support by argument. By ‘argument’ I do not intend something essentially critical or contentious (although a philosopher can be as negative and quarrelsome as anybody else). In its broadest sense, argument is simply the giving of reasons for beliefs. If there is a fundamental ground rule of philosophical practice, it is that any view, however outrageous, may be introduced for discussion, provided only that its proponent endeavors adequately to support it by argument. So we need to have a look at arguments.

An argument may be thought of as a group or bunch or series of statements. In the cleanest sort of case, one of these statements will be tagged as the intended conclusion, expressing the target belief which requires support. Others will be marked as starting points or premisses. The conclusion is what is argued for; the premisses are what is argued from. The remaining statements will attempt to illuminate the connection between the premisses and the conclusion, to establish that one who grants the truth of the premisses is thereby committed to granting as well the truth of the conclusion (or ought consistently to be so committed). There is thus an implicit “iffy” claim that goes along with any argument: If one grants the truth of the premisses, then one must (or should) grant the truth of the conclusion. An argument for which this “iffy” claim is itself true is called a valid argument. Validity is an “iffy” property of arguments. It is not, like truth and falsehood, a property of individual claims or statements. Nor, conversely, can an argument be true or false, although each of its premisses may be true or false.

Since the premisses are all statements, in the sense they may be true or false. If the conclusion is true, we will arrive at a true conclusion. If instead we happen to have a true con-clusion, then we have a failure of the reasoner, a failure of the argument. If we happen to have a false conclusion, then we have a correct, or even granted that the conclusion is false, we happen to have a correct, or even granted that the premisses are true the argument is a valid argument.

Well, it won’t do to say that the conclusion is false, because disagreement, but by argument. It applies to the substantive theses of the argument commits the absurdity of the conclusion, then, it will not just its conclusion, but that something has gone wrong in the reasoning, or we can have a look at each of the premises.

VALIDITY AND INVALIDITY

To challenge a premise of the substantive theses
or false, although each of its premisses and its conclusion may be true or false.

Since the premisses, conclusion, and intervening steps of an argument are all statements, in the ordinary way of statements they may be appraised as true or false. If the argument is a valid one, then from true premisses it will arrive at a true conclusion. (That's what 'valid' means.) Suppose, now, that the conclusion reached in some argument is an undesirable one. You don't like it. You disagree. You believe that it's false or, worse, absurd. And so you would like to challenge it. How shall you proceed?

Well, it won't do simply to disagree, to claim—or even to point out—that the conclusion is false or absurd. Philosophical criticism may begin with such disagreement, but it can't end there. For philosophical criticism is reasoned disagreement, and there is an argument to be dealt with. Recall the fundamental ground rule: Every philosophical position must be supported by argument. It applies to your disagreement, too. In order to challenge a conclusion, then, it will be necessary to challenge the course of reasoning which supports it.

You may be firmly convinced that the argument isn't a good one. How could it be, if it leads to a false or absurd conclusion? But being convinced isn't enough. After all, the person who produced the argument in the first place is probably just as convinced that everything is quite in order. He may even grant that the conclusion looks false or paradoxical. "But," he is likely to go on, "the argument commits us to it." And if you continue to insist on the absurdity of the conclusion, the most he is now required to admit is that the argument commits us to an absurd conclusion. But it still commits us to it. In order to escape such commitment, however, the argument itself, and not just its conclusion, must be called to account. It's not enough to believe that something has gone wrong. You need to find it. In other words, you need to show what is wrong with the argument. For if there's nothing wrong with it—if you accept it—then you are committed to its conclusion, however false or absurd it may continue to seem. How, then, does one criticize an argument?

Well, what can go wrong with an argument? If the argument is a valid one, then from true premisses it will arrive at a true conclusion. If in your judgment it's arrived at a false conclusion, then one of two things must have happened: either it didn't begin with true premisses, or it isn't valid. This gives us two kinds of challenges to make. We can question the validity of the reasoning, or we can quarrel with one of the premisses. Let me take some time to look at each of these challenges in turn.

VALIDITY AND INVALIDITY: MODELING FORM

To challenge a premiss of an argument would be to challenge its content—the substantive theses from which it proceeds. In philosophy, this sort of
challenge presents special problems, which I shall be talking about shortly. But an argument is more than a mere collection of statements. It is a collection of statements intended to stand in supporting relationships. Recall the "iffy" claim which goes with an argument: "If one grants the truth of the premisses, then one must (or should) grant the truth of the conclusion." The conclusion is supposed to follow from the premisses. And this, too, is open to question.

You may, in other words, dispute an argument's validity. You can challenge the argument's form. And you can do this even if you accept all the argument's premisses. Whereas a criticism of content addresses one or some of the premisses individually with the challenge "That isn't true," this criticism focuses on the relation between the conclusion and all the premisses, and its challenge is "That doesn't follow."

The general theoretical study of validity and invalidity, of what follows from what, is called logic. Because of the centrality of argument to philosophical practice, logic is one of the philosopher's most important conceptual tools. As the result of the development of symbolic or mathematical logic in the twentieth century, logic has emerged as an independent professional specialty on the boundary between philosophy and mathematics. (And, as you might guess, there is now also something called "the philosophy of logic."

Although much of philosophical argumentation is too elaborate to be reduced completely to mathematical forms, there is no denying that the feedback of symbolic logic into traditional philosophical concerns has produced considerable clarification, purging philosophical reasoning of many invalid arguments which had previously been hardy perennials. It has been particularly helpful in sorting out the valid and invalid inferences turning on the logical relationships of the quantifiers—'any', 'every', 'some', and 'none'—and the modalities—'necessary', 'possible', and 'impossible'. In consequence, students who plan to pursue the study of philosophy with some seriousness beyond the introductory level would be well advised to acquaint themselves with at least the basics of symbolic techniques. But since philosophers have worked with the concepts of validity and invalidity for hundreds of years in the absence of these mathematical tools, there is obviously a good deal that one can accomplish without engaging in such specialized studies. Let's next spend some time on these matters.

The critical fact about validity and invalidity is that they are essentially matters of the form of arguments, the pattern of relationships exhibited among various concepts. Thus, they are largely independent of the arguments' particular contents, the specific concepts entering into the patterned relationships. This is just what makes it possible to treat logical notions mathematically. It is really only another way of stressing the "iffy" character of validity: If the premisses are true, then the conclusion must also be true. Surely, that is something we ought to be able to know about an argument without knowing whether the premisses or conclusion are true. Facility with the logical assessment of arguments can be improved, then, by developing an acquaintance with the tools for dealing with statements of validity and invalidity. This short time spent with a fairly sizable set of tools which would be useful in deciding if a philosophical argument is valid or invalid would no doubt be the opening to an otherwise unwanted content which seems destined to an obviously unsatisfactory conclusion.

The characteristic of such a general observation is this: It is just our "if" which is open to question. This is not true in the case of the "then". The conclusion must a have the same pattern of relationships to an obviously unsatisfactory conclusion which the participants to the argument have established a pattern of relationships upon. If you construct a relatively true premisses and conclude an obviously false conclusion, you have established a pattern of relationships upon which the participants to the original argument are to stand in that pattern. Whereas the conclusion false to the original conclusion are true, in the sense that conclusion.

An example should make this clear. From Descartes' first steps:

I. Everything which has been acquired must be learned by each; and it is prudent never to rely on the testimony of others.

II. But perhaps I might have made an inconsistency in the conclusion, even though I cannot imagine what.

We're not going to consider Descartes' larger project, but we shall want to bring it up again.

1 René Descartes, Discourse on Method (Indianapolis and New York: Bobbs-Merrill, 1953).
be talking about shortly. It is a collection of relationships. Recall the

grants the truth of the conclusion." The

And this, too, is open to challenge.

validity. You can challenge an argument even if you accept all the

addresses one or some of these objections. If it isn't true," this critic-

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acquaintance with and a sensitivity to recurrent patterns of reasoning. Even

a short time spent in the study of philosophy will be sufficient to equip you

with a fairly sizable stock of valid and invalid patterns on which to draw. But

it would be useful if we had, in addition, a general approach to assessing the

validity or invalidity of some, perhaps unfamiliar, pattern of reasoning in a

philosophical argument—if not a conclusive mechanical testing technique,

then at least a modus operandi which, properly pursued, might save us from

an unwanted conclusion by successfully challenging the validity of the argu-

ment which seems to lead to it.

The characteristic of valid argument patterns which makes possible

such a general approach is that they necessarily lead from truths to truths.

This is just our "iffy" claim all over again: If the premisses are true, then the

conclusion must also be true. Conversely, if a pattern of argument can lead

from truths to falsehoods, it follows that it cannot be a valid pattern. This

observation gives us a handle on demonstrating invalidity. For we can show

that an argument pattern is invalid if we can find another argument which

has the same pattern but which proceeds from obviously acceptable premisses

to an obviously unacceptable conclusion—that is, to a conclusion which

all of the participants to the original dispute would agree was false. This is the

technique of modeling. You extract from the disputed argument the pattern

of relationships underlying the passage from premisses to conclusion, and

you construct a second argument on that model which passes from indisput-
ably true premisses to an indisputably false conclusion. If you can do this,

you have established that the premisses and conclusion of an argument

can stand in that pattern of relationships even though the premisses are true

and the conclusion false. It follows that the fact that the premisses of the origi-

nal argument are true and do stand in that pattern of relationships to the

original conclusion does not, by itself, commit you to accept the truth of

that conclusion.

An example should make things clearer. Here are two short passages

descartes' first Meditation:

I. Everything which I have thus far accepted as entirely true and assured

has been acquired from the senses or by means of the senses. But I have

learned by experience that these senses sometimes mislead me, and it is

prudent never to trust wholly those things which have once deceived us.

II. But perhaps God did not wish me to be deceived in that fashion, since he

is said to be supremely good. But if it was repugnant to his goodness to

have made me so that I was always mistaken, it would seem also to be

inconsistent for him to permit me to be sometimes mistaken, and never-

theless I cannot doubt that he does permit it.

We're not going to concern ourselves with the role of these passages in Des-

cartes' larger project, or with the wide variety of philosophical queries which

1 Reneé Descartes, Meditations on First Philosophy, trans. Laurence J. Lafler

could be addressed to their sense or to their presuppositions. But each of these passages contains, or at least suggests, a little argument, and we are going to concern ourselves with these. In each passage, Descartes may be understood as proposing that something could always happen. In the first instance, he suggests that it could be the case that his senses always deceive him; in the second, that it could be the case that God always permits him to be mistaken. And in each instance, he gives a reason for supposing that this is so. In the first case, his reason is that his senses sometimes deceive him; in the second, that God sometimes permits him to be mistaken. So we may, without too much violence, extract two cleaned-up arguments from these passages, each argument having one premiss and a conclusion:

A1  
My senses sometimes deceive me.  
Therefore, it could be the case that my senses always deceive me.

A2  
God sometimes permits me to be mistaken.  
Therefore, it could be the case that God always permits me to be mistaken.

Once we have sorted out matters in this way, a little scrutiny suggests that we are dealing with two examples of a single pattern of reasoning. One way of representing the common form of these two arguments is to retain the shared features but replace the specific differences of content by "dummies," or placeholders. If we try that with A1 and A2, making a few grammatical adjustments, what we get is this:

A*  
X is sometimes F.  
Therefore, it could be the case that X is always F.

If we replace the letter 'X' by 'my senses' and the letter 'F' by 'deceptive', we get argument A1. If we replace 'X' by 'God' and 'F' by 'willing for me to be mistaken', we get argument A2. We now have precisely the representation of the pattern of relationships between premiss and conclusion which we need in order to apply the technique of modeling.

What we need to do next is to produce yet another argument of the same form having an indisputably true premiss and an indisputably false conclusion. To put it differently, we need to find some other replacements for 'X' and 'F' in A* such that the sentence we get by replacing them in the premiss is clearly true and the sentence we get by making the same replacements in the conclusion is clearly false. As it happens, this is an invalid form, and there are many possible pairs of expressions which we could make use of here. You may be able to think of some of your own, but here is one which occurs to me:

A3  
What we get

The premiss A3 is false. It could not be otherwise; copies, no person might, there would be no argument pattern in a normal argument.

It is important to note that it could not be otherwise; copies, no person might, there would be no argument pattern in a normal argument.

What we need to do next is to produce yet another argument of the same form having an indisputably true premiss and an indisputably false conclusion. To put it differently, we need to find some other replacements for 'X' and 'F' in A* such that the sentence we get by replacing them in the premiss is clearly true and the sentence we get by making the same replacements in the conclusion is clearly false. As it happens, this is an invalid form, and there are many possible pairs of expressions which we could make use of here. You may be able to think of some of your own, but here is one which occurs to me:

A4  
What we get

Skill in modeling the idea of what you have proved his case. The argument might be a useful checklist, so that an argument, one which you were
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The premiss of \(A3\) is clearly, as a matter of fact, true. But the conclusion of \(A3\) is false. For a forged painting is a copy of some original painting, and it could not be the case that all paintings were copies. If all paintings were copies, no paintings would be originals, but if no paintings were originals, there would be nothing for the supposed copies to be copies of. So the argument pattern \(A^*\) is an invalid pattern and, in consequence, both of the original arguments, \(A1\) and \(A2\), are invalid arguments.

It is important to appreciate exactly what we have shown here. In particular, we have not shown that the conclusions of \(A1\) and \(A2\) are false. Validity, recall, is an "iffy" property of arguments. So we haven't established that it couldn't always be the case that my senses are deceptive. And we haven't established that it couldn't always be the case that, despite his presumed perfect goodness, God permits me to be mistaken. To show either of those things would take yet another, still different, argument. What we have shown is that the fact that the senses are sometimes deceptive is not, by itself, a sufficient reason for believing that they could always be deceptive, and that the fact that God sometimes permits me to err is not, by itself, a sufficient reason for believing that he could always permit it. We have shown, in other words, that the conclusions of \(A1\) and \(A2\) do not follow from the premisses of those arguments, and that our accepting the premisses as true does not commit us to also accept the conclusions as true. We may accept the premisses and yet deny the conclusions without getting into any trouble.

We have not determined whether Descartes' conclusions are right or wrong. What we have determined is that, right or wrong, he has not yet successfully proved his case. Consequently, even if we should grant his premisses, we remain free to reject his conclusions. (Descartes, of course, is not finished. He has lots of other arrows in his quiver. These were tiny excerpts.)

PRINCES AND FROGS: SOME CLASSICAL EXAMPLES

Skill in modeling argument forms is facilitated, of course, if you have some idea of what you are looking for, some idea, that is, of what the form of an argument might be. It would be ideal, then, if you could be supplied with a checklist, so to speak—a complete enumeration of all the possible forms of argument, one of which would perforce have to be the form of the argument which you were interested in evaluating. Unfortunately, that is just impossi-
ble. There are an indefinite number of forms of argument, some of them incredibly complex and convoluted, and there is no way to predict just what some philosopher will or will not come up with in an effort to establish his or her point.

What we can do, however, is to provide a sample of some useful and frequently-used patterns of reasoning—patterns which also often appear as pieces of those larger and more intricate arguments actually deployed by philosophers in defense of their claims. It will, in fact, be helpful to have some samples of both valid and invalid forms of argument—both princes and frogs, as it were—since, alas, philosophers are simply not infallible logicians, and so one does occasionally find a froggy invalid step in some philosopher’s reasoning happily masquerading as a princely valid argument.

In deductive reasoning, what characteristically gets the job done (or fails to get it done!) are certain “little words” which signal logical relationships among the claims being made: ‘if . . . then’, ‘not’, ‘either . . . or’, ‘both . . . and’, ‘all’, ‘every’, ‘some’, ‘none’, and the like. We can typically discover our “logical skeleton” by looking for the patterns which such little words create, once we abstract from the specific topics being reasoned about. One way to organize an “argument sampler,” then, is in terms of such little words, and that is the course which I will follow here. As my premisses and conclusions I shall simply choose some dramatic “philosophical” claims. Since validity is an “iffy” property of arguments, it does not matter for what we are up to here whether those premisses and conclusions are actually true or false, but you will surely have opinions about some of them. Perhaps you will even find yourself wondering how one might go about evaluating not just the form of an argument but its content as well—how, for example, one might usefully challenge the truth of some of these premisses. That, I am pleased to be able to inform you, is precisely the topic of the next chapter.

1. IF . . . THEN

IF abortion is murder, THEN abortion is morally wrong.

Abortion is murder.

So, abortion is morally wrong.

This princely valid argument form:

\[ \text{IF } p \text{ THEN } q \]
\[ p \]
\[ \text{(Hence) } q \]

is perhaps the simplest and most obvious pattern of correct reasoning. It goes by the classical Latin name “modus ponens.” Its invalid froggy imposter is called “affirming the consequent”:

\[ \text{IF } p \text{ THEN } q \]
\[ q \]
\[ \text{(Hence) } p \]
For instance:

IF the world
and
The world
Therefore,

We can show the invalidity of this argument by the technique of modus tollens:

IF Spot was
Spot does not
Therefore, it follows

Both premises of this line of reasoning are equivalent to each other (since no valid argument resembles an invalid one), and its form—"in the future, however, we will demonstrate this
classic example of modus tollens in exhibiting.

2. NOT with IF . .

When we introduce the concept of mental space, we find it sort of a mirror image of an argument.

IF mental space.
But mental space does not
Therefore, mental space

In skeletal form:

IF
¬N
(Hence) ¬N
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IF \( p \) THEN \( q \)

\[
\begin{align*}
q \\
(\text{Hence}) \ p
\end{align*}
\]

For instance:

IF the world was created by God, THEN it will exhibit order and lawfulness.

The world \textit{does} exhibit order and lawfulness.

Therefore, the world was created by God.

We can show the invalidity of this second form of argument easily enough by the technique of modeling. Consider, for example, my dog Spot:

IF Spot was a cat, THEN he’d have four legs and a tail.

Spot \textit{does} have four legs and a tail.

It follows that Spot \textit{is} a cat.

Both premisses of this little model argument are quite clearly true. Its conclusion, however, is equally clearly false. The argument, then, is invalid (since no valid argument could proceed from true premisses to a false conclusion), and its form—"affirming the consequent"—is indeed a genuine frog.

(In the future, however, I shall mostly leave it to you to find your own models to demonstrate the frogginess of the invalid forms of argument I will be exhibiting.)

2. NOT with IF . . . THEN

When we introduce a ‘not’ into our ‘if . . . then’ reasonings, what we find is sort of a mirror image of the pure ‘if . . . then’ situation. Here, a prinçe argument looks like this:

IF mental states are brain states, THEN they are located in space.

But mental states \textit{are NOT} located in space.

Thus, mental states are NOT brain states.

In skeletal form:

IF \( p \) THEN \( q \)

\[
\begin{align*}
\text{NOT } q \\
(\text{Hence}) \ \text{NOT } p
\end{align*}
\]
In this case, the invalid froggy imposter is the form which mimics our prinvely *modus ponens* arguments.

\[
\text{IF God were at all evil, THEN the world could be better than it is.}
\]
\[
\text{But God is NOT at all evil.}
\]
\[
\text{Therefore, the world could NOT be better than it is.}
\]

Or, in skeletal form:

\[
\text{IF } p \text{ THEN } q \\
\text{NOT } p \\
\text{(Hence) NOT } q
\]

Notice that it is important, when constructing skeletons for the purposes of modeling, that each occurrence of a word, group of words, or sentence be replaced by the same "dummy" letter every time it occurs—and, conversely, when you are actually presenting the model argument, that each "placeholder" in the skeleton be replaced by the same words or sentence every time that it occurs. Only in this way can you be sure that the model argument you end up with indeed has the same form as the argument you set out critically to evaluate.

3. BOTH . . . AND with NOT

The case of 'both . . . and' by itself, of course, is pretty straightforward. When 'and' is combined with 'not', however, we once again run the risk of confusing an invalid frog with a valid prince. The prinvely argument looks like this:

\[
\text{Space can NOT be BOTH finite AND unbounded.} \\
\text{Space is unbounded.} \\
\text{So space is NOT finite.}
\]

(If you're curious, by the way, the first premiss of this argument is, in fact, false. I won't, however, say anything here about its conclusion.) When we skeletonize this valid argument, we get the form:

\[
\text{NOT BOTH } p \text{ AND } q \\
\text{p} \\
\text{(Hence) NOT } q
\]

Unfortunately, there is a frog in the vicinity.
21 The Form of an Argument

Mercy killing can NOT be BOTH morally obligatory AND morally wrong.

It surely is NOT morally obligatory.

So mercy killing must be morally wrong.

Here, our skeleton is:

\[
\text{NOT BOTH } p \text{ AND } q \\
\text{(Hence) } q
\]

and while this may look deceptively like our valid prince, a little thought—and a little modeling—should convince you that it is indeed a froggy imposter. (Consider, for example, that mercy killing might be neither morally obligatory nor morally wrong. It might sometimes simply be permitted, for instance, without ever being a moral obligation or duty.)

4. EITHER . . . OR with NOT

The case of ‘or’ is complicated by the fact that the word is used both exclusively and inclusively. That is, sometimes ‘A or B’ has the force of ‘either A or B but not both’ (e.g., “I’ll ask Abigail or Betty to the dance”), while at other times it has the force of ‘either A or B or both’ (e.g., “Please feel free to take seconds of avocado or beans”). Whether ‘or’ is used exclusively or inclusively, however, if we can rule out one of the alternatives, we can validly infer that the remaining alternative does hold. In other words, arguments of the form:

\[
\text{EITHER } p \text{ OR } q \\
\text{(Hence) } q
\]

are always valid. As an example, we can take:

Values are EITHER discoverable properties of things (like colors) OR they are conventional products of arbitrary human decisions.

But values are obviously NOT discoverable properties of things.

So values must be conventional products of arbitrary human decisions.

Notice that this argument proceeds from the falsity of one alternative to the truth of the remaining alternative. We might also be tempted to suppose that
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it is equally in order to argue from the truth of one alternative to the falsity of the remaining alternative. That is, we might be tempted to accept the form:

\[
\begin{align*}
\text{EITHER } & \, p \, \text{ OR } \, q \\
(\text{Hence}) & \, p \\
\end{align*}
\]

and sometimes this will not get us into any trouble. In particular, we know we are safe when our two alternatives, \( p \) and \( q \), are logically guaranteed to be mutually exclusive—when, for example, alternative \( q \) is simply the negation of alternative \( p \)—as in the argument:

Judith's argument is EITHER valid OR invalid.
As we have seen, her argument is valid.

Hence, it is NOT invalid.

Nevertheless, we cannot accept this argument form as a true prince, for sometimes, alas, it can get us into trouble. Sometimes, that is, this form of argument can lead from true premisses to false conclusions. Indeed, it can do so whenever 'or' is being used in the inclusive way, as, for instance, in the argument:

Our tests show that EITHER your generator OR your distributor is defective.
Now your generator is defective.
So your distributor is NOT defective.

Here, of course, it may well be the case that BOTH the generator AND the distributor are out of order. Only if we had an additional premiss (say, further tests) which excluded this third possibility would we be entitled to conclude that the defective generator was the whole of the problem. When 'or' might be being used in this inclusive way, in other words, what we need is not an argument of the form which we have been examining, but a more complicated argument—an argument of the form:

\[
\begin{align*}
\text{EITHER } & \, p \, \text{ OR } \, q \\
\text{NOT BOTH } & \, p \, \text{ AND } \, q \\
(\text{Hence}) & \, p \\
\end{align*}
\]

(And, if you are on your toes, you will notice that in this form of argument, the first ('either . . . or') premiss is simply superfluous!) What happens in

it is not clear that sensation ruled out that

5. EVER

'Every' a
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It

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TEGR (for we ca
is important, in correct order. We
any interesting 'either . . . or' argument, of course, is that we cannot tell just by looking whether the 'or' is correctly to be understood as inclusive or exclusive. Thus, for instance, in the argument:

Sensations are EITHER mental OR physical.
Sensations are mental.
Therefore, sensations are NOT physical.

it is not clear that we can, without further argument, rule out the possibility that sensations are BOTH mental AND physical—and since we have not ruled out that possibility, the argument as it stands is invalid.

5. EVERY and SOME

'Every' and 'some' tend to be well behaved when they appear in premisses or conclusions by themselves. It is primarily when we combine them in a single claim about the relationships between two groups of items that we find an occasional frog peeking out at us from among the princes. This is easiest to illustrate with mathematical examples, so let us take our two groups of items to be the positive integers (1, 2, 3, 4, . . .) and integers in general (including negative integers). Since −1 is smaller than every positive integer, the following princely argument is not only valid, but also sound—that is, it has a true premiss and a true conclusion as well:

There is SOME integer which is smaller than EVERY positive integer.

It follows that, for EVERY positive integer, there is SOME integer smaller than it.

Now it may look as if we were simply repeating ourselves in offering the conclusion of this argument—but therein lies the froggy peril. For consider the following argument:

For EVERY integer, there is SOME positive integer larger than it.

It follows that, there is SOME positive integer which is larger than EVERY integer.

Here, the conclusion does not "follow" at all! Rather, it contradicts something which we know independently to be true: that there is no largest integer (for we can always add 1 to any integer and produce a larger one). It is important, in short, to get our 'every' and our 'some' in such claims in the correct order. Whereas arguments of the form:
There is SOME x which is R-related to EVERY y.

(Hence) for EVERY y, there is SOME x which is R-related to it.

These are valid, in other words, arguments of the form:

For EVERY x, there is SOME y which is R-related to it.

(Hence) There is SOME y which is R-related to EVERY x.

These are not. Just remind yourself that

For EVERY son, there is SOME woman who is his mother.

And remember that it is false that

There is SOME woman who is the mother of EVERY son.

And you will never go astray!

THREE MORE USEFUL PATTERNS

I have already remarked, the set of possible forms of argument is inexhaustible, and so a decision to break off a collection of examples at this or that point must, in the end, be a matter of judgment. We soon find ourselves searching for some general tools for handling all sorts of arguments—and that, indeed, is precisely what is provided by the discipline of formal (mathematical or symbolic) logic. For me to undertake to present a mini-course in formal logic here, however, would unfortunately be an example of very poor judgment on my part. The topic is simply too complex to be fully treated at such short length. Still, good judgment, I think, dictates that I not abandon the theme of argument forms without at least mentioning three more valid patterns of reasoning which are often especially useful—so useful, indeed, that they tend to show up very frequently whenever philosophers (and even nonphilosophers) set about to attempt to establish a conclusion.

The first of these patterns is characteristically found in “case studies”—documents in which a complex situation is broken down into a series of alternative possibilities. If each alternative can then separately be shown to imply a certain result, then, although we may not be able to determine which of the various possibilities is in fact the case, we can nevertheless validly conclude that this result is itself true. When there are just two alternative possibilities, p and q, for example, the pattern looks like this:
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EITHER
IF \( p \) \( \rightarrow \) THE
IF \( q \) \( \rightarrow \) THEN

\( (\text{Hence}) \ r \)

For example:

Human actions are random occurrences:
IF human actions are random, they do not arise.
But IF human actions do not arise, again we cannot determine

Therefore, there is no

When the outcome of such reasoning (for example), the argument is often termed a dilemma. There are three situations mentioned in the 'either . . . or the dilemma. There are three situations that threaten to "impale you upon the horns of the dilemma." Or you can challenge the enumerated alternatives, i.e., that something has been going to run between the horns of the dilemma.

The remaining two useful patterns are to conclude by reasoning from hypotheses that are not asserted as something which to be true, but rather merely temporarily "iffy." In such a case, the argument

SUPPOSE \( p \)

\( \ldots \)

\( \ldots \)

\( \ldots \)

\( (\text{Hence}) \ IF \ p \ THEN \ q \)
EITHER $p$ OR $q$

If $p$ THEN $r$

If $q$ THEN $r$

(Hence) $r$

For example:

Human actions are EITHER causally determined OR mere random occurrences.

If human actions are determined by external causes, THEN they do not arise from our exercise of free will.

But IF human actions are mere random events, THEN once again we cannot exercise free will.

Therefore, there is no free will.

When the outcome of such reasoning is uncomfortable (as, perhaps, in the example), the argument is often termed a dilemma. The two alternative possibilities mentioned in the ‘either . . . or’ premiss are then called the horns of the dilemma. There are three things which you can do when someone threatens to “impale you upon the horns of a dilemma." You can challenge the first ‘if . . . then’ premiss—that is, you can grant the first alternative, but argue that the uncomfortable result does not arise from it. This is called “swallowing the first horn of the dilemma.” Or you can similarly challenge the second ‘if . . . then’ premiss (swallow the second horn of the dilemma). Or you can challenge the ‘either . . . or’ premiss. That is, you can argue that the enumerated alternative possibilities are not all the possibilities, i.e., that something has been overlooked. And this is called “attempting to run between the horns of the dilemma.”

The remaining two useful patterns of argument both establish their conclusions by reasoning from hypotheses. In these cases, one of the premisses is not asserted as something which the arguer is committed to believing to be true, but rather merely temporarily supposed, “for the sake of argument,” to see what conclusions one could derive from it if it were true. As you might suspect, then, this is the pattern of reasoning characteristically employed when someone is interested in establishing a conclusion which is itself “iffy.” In such a case, the argument skeleton looks something like this:

**SUPPOSE** $p$

\begin{itemize}
  \item \hspace{1cm} intermediate steps
  \item \hspace{1cm} of an argument showing
  \item \hspace{1cm} that $q$ would follow
  \item \hspace{1cm} from what we supposed
  \item \hspace{1cm}
\end{itemize}

(Hence) $IF$ $p$ $THEN$ $q$
Here is an example:

**SUPPOSE** that there exists some being (call him “Otto”) who is omniscient.

Now, it’s either true that I will go swimming next Tuesday, or it’s true that I will *not* go swimming next Tuesday.

If it’s true that I will go swimming next Tuesday, then (since an omniscient being knows all truths), Otto now knows that I will.

And if it’s true that I will *not* go swimming next Tuesday, then Otto now knows that I will *not*.

So, in either case, Otto now knows what I will do next Tuesday.

But the same conclusion can be reached about *any* of my future actions.

So Otto now knows what all of my future actions will be.

But then all of my future actions are already *determined*, and I am not genuinely free to choose, for example, whether or not to go swimming next Tuesday.

Hence, **IF** there exists an omniscient being, **THEN** people do not have free will.

The second, even more common, application of such hypothetical reasoning is its use to show that a claim is *false*, by arguing that, if we supposed otherwise (that is, if we suppose that the claim is *true*), disastrous consequences would ensue. In this instance, of course, the “disastrous consequences” are only *logically* disastrous—that is, they consist in the derivation of some *absurdity*, either the derivation of a straightforward self-contradiction (often including the negation of the very claim we began by supposing) or, less dramatically, the derivation of some further claim which all parties to the discussion agree is simply obviously false. This form of argument, indeed, is traditionally called “reductio ad absurdum” (“reduction to an absurdity”). In skeletal form, such arguments look like this:

**SUPPOSE** $p$

\[
\begin{align*}
\cdot & \quad \text{intermediate steps} \\
\cdot & \quad \text{showing that } x \text{ would} \\
\cdot & \quad \text{follow from what we} \\
\cdot & \quad \text{supposed} \\
\cdot & \quad \\
\hline
x & \quad \text{(an absurdity!)}
\end{align*}
\]

(Hence) **NOT** $p$

For our last example, let us travel to the island of knights and knaves, explored in charming detail, along with other strange territories, by Ray-
mond Smullyan in his wonderful book *What Is the Name of This Book?—The Riddle of Dracula and Other Logical Puzzles* (Prentice-Hall, 1978).

What you need to know about the inhabitants of this island is that knights *always* tell the truth, but knaves *always* lie. When you come across two natives, Ambrose and Boris, then, should Ambrose happen to remark “At least one of us is a knave,” you could correctly reason:

**SUPPOSE** that Ambrose is a knave.
Then, since knaves always lie, what Ambrose said must be false.
That is, it is false that at least one of them is a knave.
But then both of them, including Ambrose, must be knights.
That is, Ambrose must be both a knave and a knight. (An absurdity!)

It follows that Ambrose is NOT a knave.

(And, parenthetically, you could go on to conclude that Boris *is* a knave, since Ambrose, whom you now know to be a knight, has truly said that at least one of them is a knave.)

Dilemma, argument from an hypothesis, and *reductio ad absurdum*—three useful patterns. But of course, as we have already several times remarked, there is more to any argument than its form. Every argument also has a **content**, a distinctive set of premises and presuppositions which are themselves being put forward by its author as **truths**. When an argument is formally impeccable but, for all that, still results in a conclusion which you judge to be false, then, it is necessary to come to terms with its content, to issue a challenge directly to one of those premises or presuppositions. How one goes about doing that is, as promised, the topic of our next chapter.