Dialectics and the Macrostructure of Arguments

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Dialectics and the Macrostructure of Arguments

A Theory of Argument Structure

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THIS BOOK

IS DEDICATED TO

DR. BEN KIMPEL

MY FIRST TEACHER

IN LOGIC AND PHILOSOPHY

IN DEEP APPRECIATION FOR

OUR MANY YEARS OF FRIENDSHIP

Contents

Preface

This is an essay in logical theory. However, the topics we shall explore are by and large not those one would ordinarily associate with logical theory. We shall not be discussing the nature of entailment, or how well or how poorly it is captured by the '⊃' of material implication. We shall not be discussing how many truth-values there are or whether some modes of statement compounding leave truth-value gaps. We shall not be exploring interpretations of quantifiers or patterns of inference involving them. All of these themes pertain to deductive logic. A hallmark of deductive logic is its concern with logical form or structure. Determining the form of an argument is central to assessing whether or not it is deductively valid. We shall be concerned here with the structure of arguments also, but structure in a radically different sense. Whereas deductive logic is concerned with the *microstructure* of arguments, we shall be concerned with their *macrostructure*. What do we mean by this distinction?

In deductive logic, analysing the logical form of an argument involves looking, to some degree, at the internal structure of the statements which compose it. Whether we are dealing with truth-functional validity, syllogistic validity, generalized quantificational validity, or even validity in some modal system, we shall be concerned with how at least some statements in our argument are built up from their constituent parts. Even with so simple a form as *modus ponens*, one must see that one premise is a conditional, that the other is the antecedent of that conditional, and that the conclusion is the consequent. Thus this involves looking at the internal structure of at least one statement in the argument. By contrast, when we speak of structure in this essay, we shall be concerned principally with how statements as wholes enter into arguments. What statements are put forward to support, give evidence for, allegedly entail, what other statements? What configuration does this support relationship display? These are macrostructural issues.

It is macrostructure which is displayed through the tree or circle and arrow diagramming technique currently presented in many informal logic texts. In diagramming an argument in natural language, we are concerned to portray how the component statements as wholes hang together, rather than look at their internal structure. In constructing circle and arrow diagrams, we are not concerned with whether a component

statement in an argument is a conditional, disjunction, categorical proposition, or an instance of some generalization. It is easy to appreciate that macrostructural analysis is far more general or generic than analysis for microstructure. Issues of microstructure arise for specific families of arguments. We may identify various classes of arguments — those whose validity depends on their truth-functional structure, syllogistic structure, or generalized quantificational structure. Different types or degrees of microstructural analysis are needed in each case. Furthermore, such analyses might not be at all revealing of logical cogency if applied to inductive arguments of various types. (Notice however that microstructural issues are also adjunct to evaluating inductive arguments. To assess the strength of a categorical inductive generalization argument, it is necessary to see its premises as instances of some generalization which constitutes the conclusion. Likewise, for arguments by analogy, it is crucial to identify reference items, target item, similarities argued from, similarity argued for. But all this involves looking at the internal structure of the statements out of which an argument is composed.) But in any text purporting to express an argument, we should be able to distinguish statements presenting evidence from claims that evidence purportedly supports.

This indicates why macrostructural analysis is especially important in informal logic. A central goal, if not *the* goal, of informal logic is to develop means of appraising arguments in ordinary language. But such arguments are of all types. Some are deductive. Others are instances of some standard inductive family. Still others may not obviously fit into any of these categories. Generic tools which could be applied in the analysis and evaluation of any of these arguments would be far more in line with the informal logician's goal than tools restricted to some particular family. Furthermore, recognizing that an argument was a member of a particular family, that it was an instance of a pattern pre-identified as logically important, might require some degree of sophistication. To gain this sophistication, one might have to practice on artificial arguments or formal argument schemata, the very thing informal logic seeks to eschew.

The generic aspect of macrostructure is not the only reason why it is interesting and important in informal logic. Indeed, enthusiasm for constructing tree diagrams to picture the macrostructure of arguments is not hard to understand. The tree diagraming method provides a way of displaying the logical support structure of arguments in ordinary language. And without seeing how an argument hangs together, without being able to recognize what supports what, how can we meaningfully have argument evaluation? How can we evaluate just how well an argument supports its main conclusion until we see what reasons are given to directly support the main conclusion, which of those reasons in turn are supported by argumentation, what implicit assumptions, if any are entertained in each of these various reasonings? Diagrammatic representations allow us to identify the

subarguments out of which a complex argument is built. Once identified, we can apply critical questions to assess the cogency of each subargument and the cogency of the whole.

This essay differs from logical theory developed under the deductive logic paradigm in another way. Our very understanding of the nature of argument is different. As an emphasis on macrostructure is a distinctive feature of much informal logic pedagogy, so an emphasis on the dialogical or dialectical nature of argument is becoming a prominent feature of the theory of informal logic and argumentation. In standard logical theory, one would define an argument as a passage, a set of statements, in which some statements, the premises, are put forward to support other statements, the conclusions. Such discourses could be prepared and presented by one person. This is the monological view of argument. Against this, there is a strong emphasis in much informal logic theory that argument must be viewed primarily as an interchange between two or more persons. Argument is basically dialogical, not monological.

In Chapter Two, we develop the notion that certain interchanges, basic dialectical situations, are fundamental to modelling how argument develops. We see arguments generated through a challenge-response dialogue where the proponent of some thesis answers critical questions posed by a challenger. We may view arguments in the monological sense as products of such dialogical exchange processes. We thus accept the process/product distinction for argument put forward by a number of authors. And we agree that process is fundamental to understanding argument. Indeed, the fundamental thesis of this book asserts that we can properly motivate and understand the structure of arguments *as products* through considering the various challenges which may arise in basic dialectical situations, arguments as process. We shall thus present a dialectical theory of argument macrostructure.

This emphasis on process and dialectical exchange explains why we devote so much attention to the work of Stephen Toulmin, in particular to his essay, *The Uses of Argument*. In that work, Toulmin advocated replacing what he called the geometrical model of understanding argument with a jurisprudential model. But surely just as a geometrical demonstration is a paradigm example of a monological argument, a paradigm example of a dialogical argument is the exchange between two opposing attorneys. In *The Uses of Argument*, Toulmin contributed an account of argument macrostructure where certain structural distinctions are motivated by distinct questions which an interlocutor can ask someone prepared to advance and defend some thesis. In this account, Toulmin introduces novel categories for the analysis of arguments. Although Toulmin motivates only some of these categories by distinct questions, this motivation could be straightforwardly extended to the others. Not only can we do this, we contend that doing so

is very illuminating in most cases for understanding argument macrostructure. Hence, our approach owes a very distinct debt to Toulmin's work.

This does not mean, however, that we have simply appropriated Toulmin's categories in our work. Although we believe that Toulmin's scheme is highly profitable for the analysis and ultimately the evaluation of arguments, we reject some of his categories as proper for analysing the macrostructure of arguments as products, and we radically rethink Toulmin's conception of certain other categories. It is incumbent on us, therefore, to argue for our adaptation of Toulmin's scheme and overall approach. This can only be done by critically examining at length both Toulmin's views on the nature of these structural categories and the interpretation of them as categories of macrostructure for arguments as products.

Toulmin's system for analysing arguments also highlights why we need a theory of argument macrostructure. Someone approaching the issue of macrostructure from the perspective of standard logical theory might be quite puzzled over the proposal to present a theory of argument macrostructure. After all, are there not just two macrostructural categories — premises and conclusions? Premises give support; conclusions receive support. What could be simpler than that? What is there to theorize over? Let us move on to more substantive issues! The advent of informal logic has changed this situation completely. As we point out in Chapter One, the tree or circle and arrow method for displaying argument macrostructure now popular in informal logic pedagogy envisages premises and conclusions combining in a number of different ways. Properly distinguishing these ways raises theoretical issues. The need for theory becomes much more acute when we are confronted with Toulmin's rival system of categories. The purpose of this paper is to develop a theory-backed account of argument macrostructure.

Work on this essay began while I held a Fellowship Leave from Hunter College of The City University of New York. I hereby wish to thank Hunter College for granting me this leave. The camera-ready copy was produced in the Hunter College Academic Computing Services. I again wish to thank Hunter College for making the proper facilities available to me, and to thank Mr. Andrew Blaner, microcomputer specialist, for his technical assistance. Professors George Bowles and Gerald Press read an earlier draft of this manuscript. I thank them for their comments. Thanks are also due to an anonymous referee of Foris Publications whose comments helped greatly in focusing this essay. The responsibility for any views expressed here is, of course, completely mine. Finally, this preface contains certain brief excerpts from my paper, "The Place of Informal Logic in Logic," which appears in Ralph H. Johnson and J. Anthony Blair (eds.), *Informal Logic: Second Series* (Informal Logic Publications, 1991).

J. B. F.

The Need for a Theory of Argument Structure

1.1. THE STANDARD APPROACH

The approach to argument diagramming which we call standard was originated, to the best of our knowledge, by Monroe C. Beardsley in *Practical Logic* [1950], renamed *Thinking Straight* in later editions. Beardsley's system is simple to describe. It calls for identifying the component assertions in an argument, bracketing and numbering them. In diagramming, these numbers encircled represent the component assertions of the argument. Those which are basic reasons, which are not supported, at least in that argument, by further reasons, appear at the top of the diagram. Downward directed arrows point from these reasons to the assertions they directly or immediately support. If any of these are intermediate conclusions, further downward directed arrows will point from them to the assertions *they* directly support. This continues until we reach the final conclusion or conclusions of the argument.

In *Practical Reasoning in Natural Language* [1986],[1] Stephen N. Thomas significantly refined Beardsley's procedure. He first contributed names to the various basic patters which diagrams may display. If two or more statements are immediately supported by the same premise, we have *divergent* structure. If one statement supports an intermediate conclusion, that supports a further conclusion (and that a further...), we have *serial*structure. But Thomas noted that two or more statements could immediately support a single conclusion in two distinct ways. In some cases, the reasons are independent of each other. In others, each of the reasons is somehow dependent on the others to support the conclusion. The first pattern Thomas calls *convergent* the second, *linked*.

Both Beardsley and Thomas accept then the quite conventional view that the component elements in arguments are statements or assertions. There are two different structural roles statements may play, premise or conclusion, and these roles are not exclusive. We may schematically represent the four basic structures this way:[2]

DIVERGENT   SERIAL   CONVERGENT   LINKED
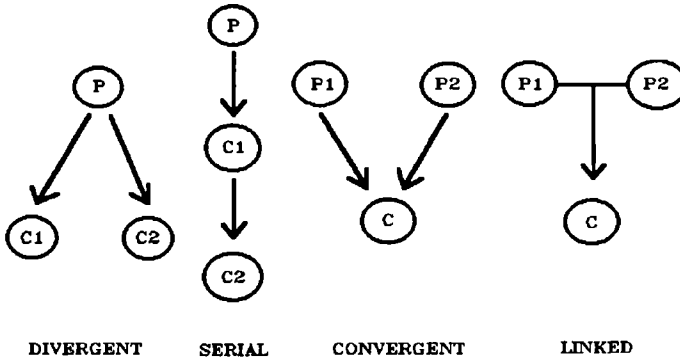
Of course, we can have complex arguments displaying several, even all, of these patterns. In such arguments, we can recognize subarguments which are serial, divergent, linked, or convergent. For example, the following diagram might represent the structure of a given argument:
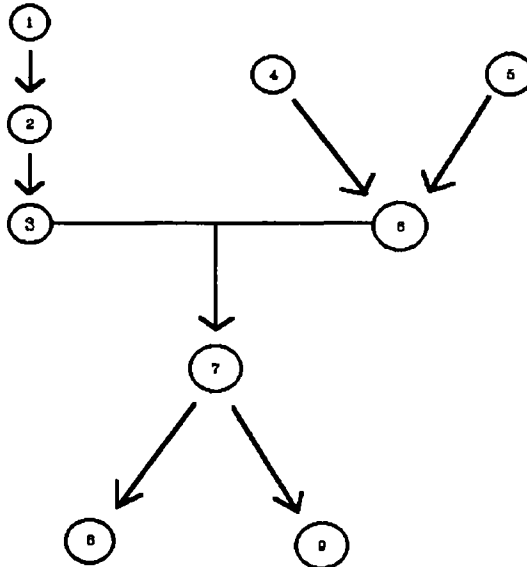
Many other textbook writers have followed Thomas by incorporating this diagramming procedure in some form into their texts.[3] This approach has become so well received that we may refer to it as the standard approach.

It would be wrong to infer, however, that this approach appears only in textbooks and is interesting only as an informal logic pedagogical technique. In *Galileo and the Art of Reasoning*, [1980], Maurice A.

Finocchiaro uses argument diagrams to analyze several arguments appearing in Galileo's *Dialogue Concerning the Two Chief World Systems*. These are substantial arguments concerning the scientific controversies of Galileo's day. Finocchiaro regards the diagrams as essential preparation for evaluating these arguments. In *Speech Acts in Argumentative Discussions*, [1984], Frans H. van Eemeren and Rob Grootendorst present a diagramming scheme which also employs the same structural configurations as the standard approach.[4] This has especial interest in the light of our discussion in Chapter Two, where we argue that argument is basically dialectical or dialogical. Van Eemeren and Grootendorst include their remarks in their discussion of analyzing arguments arising in discussions, exchanges between a proponent and a challenger. This indicates that the standard structures can be used to represent the structure of arguments arising in such dialogues, and not merely the structure of arguments put forward by a single arguer speaking or writing in monologue. We shall have much more to say of these matters in due course. But the standard approach is not the only approach to analyzing argument structure. It has a noteworthy rival in the Toulmin model, which we consider in the next section.

1.2. TOULMIN'S RIVAL ACCOUNT

In Chapter Three, "The Layout of Arguments," of *The Uses of Argument* [1958], Stephen Toulmin presents a distinctly different view of how arguments are structured. We must, however, raise one issue at the outset. The standard approach to diagramming arguments is clearly intended as a method for analyzing argumentative texts, written or spoken discourses which contain arguments. Although one would naturally presume in reading Toulmin's account that he is also presenting a method of textual analysis, this view is open to question. We must here anticipate a distinction we shall develop later in this essay, the distinction between argument as process and argument as product. Argumentative texts are products. They are in a straightforward sense the finished results of some deliberative process. This process, as we shall argue, can be appropriately modelled as a dialogical interchange between the arguer as proponent and a challenger as questioner and rational judge. The argument as product develops and evolves through a challenge-response process.

Given this distinction, the question arises as to whether Toulmin's model is intended to describe the structure of the argument as process or the argument as product. In the Introduction to *The Uses of Argument*, Toulmin makes this significant remark:

> Logic (we may say) is generalized jurisprudence....A main task of jurisprudence is to characterize the essentials of the legal *process:* the procedures by which claims-at-law are put forward, disputed and

> determined, and the categories in terms of which this is done. Our own
> inquiry is a parallel one: we shall aim, in a similar way, to characterize
> what may be called 'the rational *process*', the procedures and categories
> by using which claims-in-general can be argued for and settled.[5]

Again, Toulmin says that the question he is addressing in his account of the
layout of arguments concerns "the functions of the different propositions
invoked in the course of an argument and the relevance of the different sorts
of criticism which can be directed against it."[6] Not just the function of the
different sorts of propositions which could be incorporated into the
argument as product, but the relevance of the criticisms, e.g. the critical
questions which a rational judge could raise in the course of the argument
as process, are part of argument analysis. These passages suggest that
Toulmin is developing a means of analyzing argument as process rather than
product.

　　　　Yet, there are other passages which suggest that Toulmin is
ambivalent about this issue. The introductory paragraphs of "The Layout of
Arguments" suggest that Toulmin intends to present a method for analyzing
arguments as products. He begins by observing that arguments can be set
out on printed pages or delivered in oral address, i.e. arguments can be
presented monologically. Such arguments are ultimately composed of
sentences, and it is these sentences which can be "laid out" in various ways.
Toulmin questions the adequacy of the traditional layout of "three proposi-
tions at a time, 'minor premiss; major premiss; *so* conclusion'."[7] He
believes a more elaborate layout is necessary if arguments are to be
properly —"candidly" is his term—analyzed. This all suggests that Toulmin
intends his model as a tool for analyzing argumentative texts. However,
Toulmin also suggests that the proper layout of arguments must be
developed with an eye to procedure and logical process on analogy with
legal process.

　　　　I believe this ambivalence may be resolved faithful to Toulmin's
intentions this way:

> The statements composing arguments as products have
> various functions, functions which are derived from or
> reflective of their role in arguments as process. A proper
> understanding of the structure of arguments as products
> must reflect the functional roles statements may play in
> arguments as process.

In this light, Toulmin is offering a mode of analyzing argumentative texts,
but one which sees product structure dependent upon process structure.

　　　　There are other reasons why it is natural to interpret Toulmin as
describing the structure of argumentative texts. First of all, our training,

and we would expect the training of the vast majority of Toulmin's audience, leads us to identify argument with argumentative product. Arguments *are*discourses in which certain statements are put forward to support others. Hence, we on our first reading of Toulmin and we believe others have taken him to be proposing a structural analysis of arguments as products. In addition, despite Toulmin's intentions, we may simply take his account as a proposed method for analyzing argumentative texts. We may examine this proposal on its own merits, independently of whether Toulmin would explicitly endorse it. Having given these caveats concerning Toulmin interpretation, we can now proceed to present this rival account of argument structure.

Premises and conclusions—every argument needing at least one of each—are the two functional roles for statements standardly distinguished in arguments. By contrast, Toulmin distinguishes six roles for argumentative elements, six types of elements in his account of the layout of arguments. Conclusions, or as he ordinarily calls them, *claims* are one of these six types. Facts given to support, justify, ground a claim are *data*. Data are potential answers to the question "What have you got to go on?" asked to challenge a claim, and the range of facts which may be presented in various arguments is quite broad.[8] Data would be counted as premises under the standard analysis. But when data are offered to support a claim, the arguer may be challenged further to explain why the data are pertinent to the claim; why do the data constitute evidence for the claim? Why are we justified in making a move from the premises to the conclusion? The element providing this explanation, answering the question "How do you get there?" Toulmin calls a *warrant*. Warrants may be presented as hypothetical or generalized hypothetical statements. "Data such as D entitle one to draw conclusion, or make claims such as C" or "Given data D, one may take it that C" constitute their canonical form.[9]

Consideration of warrants leads Toulmin directly to identify two further types of elements in argument, not part of the standard analysis. First, different warrants permit asserting our conclusions with different degrees of force, given our data. "Necessarily" is appropriate in some cases, while "probably," "presumably" properly describe the warranted force in others. Expressions indicating various degrees of force Toulmin calls *(modal) qualifiers*. That there are such differences indicates we should be able to include qualifiers in the layout of arguments. Secondly, warrants which apply ordinarily may have to be set aside in certain cases. Given that a decedent has bequeathed a piece of property to an individual in his or her will, we may take it that the individual will be the rightful owner of that property upon settlement of the will. But wills may be legally invalidated and in such cases this warrant must be set aside. Toulmin believes we should also be able to represent such "conditions of exception or rebuttal,"[10] in the layout of arguments, which he standardly refers to as *rebuttals*.

.The final type of element Toulmin distinguishes is the *backing* an arguer may give for a warrant. Warrants may be challenged and backing offered to certify their authority. Why is it that given the provisos of a will, we may take it that certain individuals have rights as beneficiaries? The proper answer involves citing the appropriate provisions of probate law. Such provisions then would be backing for the warrant.

Toulmin structures these elements he has distinguished in the following way to diagram the layout of arguments:

D ———————⟶ So, Q,   C
                │   │
             Since   Unless
               ▼   R
               │
         On account of
               B
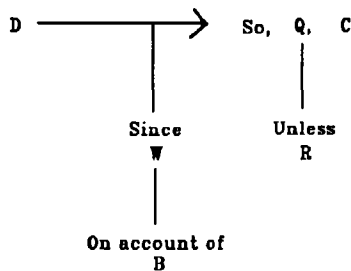
This is all straightforward. We appeal to data D to justify claim C. The arrow indicates this evidential support. The warrant W licenses the move from D to C and so is "attached to" the arrow. The backing B authenticates the warrant and so is attached to it. The modal qualifier Q is understood to modify the claim, indicating the force with which it is asserted, and so is written next to the claim. Rebuttals R indicate conditions when the warrant would have to be set aside and so the force of the claim invalidated. Hence they are attached to the modality. Here then we have Toulmin's approach to argument structure, a distinctly different layout from the standard approach.

1.3. PROBLEMS FOR A THEORY OF ARGUMENT STRUCTURE

Toulmin poses a challenge to the standard approach because his account is radically different. On the standard approach, there are basically just two types of elements in arguments—premises and conclusions. These are the two, and the only two, functional roles statements may play. Function is indicated by the position of the statement, or the encircled number representing the statement, in the argument diagram. Appearing at the head of an arrow, it is a conclusion. Appearing at the tail, perhaps linked together with other statements, it is a premise. Arguments then are structured entities built out of statements. Also on the standard approach,

argument structure itself is very multiform. Given as basic the convergent, serial, divergent, and linked patterns, together with the primitive pattern of one premise supporting a conclusion, we can generate a myriad of patterns by successively combining simpler structures into more complex. The standard approach then envisions a basic homogeneity in the type of elements that may enter into arguments together with an astonishing multiplicity in the structural patterns into which they may enter.

With Toulmin's approach, on the other hand, there is a multiplicity of elements together with a basically fixed pattern into which they may enter. Notice also that not all the elements in an argument are statements playing some functional role. Data, claims, and backing are statements. As we shall discuss at length in Chapter Three, just what warrants are is problematic, but there is ample reason not to count them simply as statements. Modalities and rebuttals do not make complete assertions, and so are not statements. There are then six different types of elements which may occur in arguments, according to Toulmin. But the structural pattern arguments display is by and large fixed. It is the pattern presented in the previous section. Although we may not need always to include modalities, rebuttals, or backing, and so some arguments will have simpler structures than others, when an element appears in an argument, it will in general appear in a specific position.[11]

Toulmin's rival account thus raises two central questions about argument structure:

1. What are the fundamental elements of arguments?
2. How do these elements fit together?

Just what are the structural categories, the types of elements to be discovered in arguments? Are they the standard two or Toulmin's six? There is no dispute over claims—conclusions on the standard approach. There cannot be argument without an attempt to establish at least one point. But Toulmin's other elements are controversial. Data, warrants, and backing might all be counted as premises on the standard approach. Do we have distinct types of elements here? Modalities and rebuttals have no standard counterparts. Are such elements to be found in arguments? Much of the novelty of Toulmin's approach lies in distinguishing these elements. What value does this have as a potential contribution to a theory of argument structure? Even with these issues settled, we must address the question of whether there is essentially just one pattern for argumentative elements or whether they may combine in myriad ways. To answer all these questions, indeed to decide between these two approaches, to appraise properly what contribution each makes to our understanding of structural issues, we need to develop a theory of argument structure. We need to have some theoretical backing or framework within which to develop our answers.

Toulmin's rival account even raises the theoretical issue of just what is to count as *one* argument. Toulmin readily admits that data may need defending and may be supported by argument. However, for Toulmin, such argumentation constitutes a separate argument, distinct from the argument for the main claim at issue, rather than a subargument of the overall reasoning for that claim. We argue for the data as a lemma. When that argument is completed, we proceed to use the data to support the main claim. On the standard approach, argumentation for lemma and subsequent argumentation for main claim might all be viewed as constituting one argument involving serial structure. Toulmin's alternative approach raises this question:

> Just how do we individuate arguments? When do we have
> one argument, as opposed to two?

Can we answer such a question without a theory of argument structure? These problems, then, raised by Toulmin's approach, show the need for such a theory.

1.4. FURTHER PROBLEMS POSED BY THE STANDARD APPROACH

Even without the Toulminian challenge, the standard approach would still need a theory of argument structure. This can be argued very persuasively from the problems persons have encountered in constructing argument diagrams. Some have raised complaints that instructions in informal logic texts are unclear or misleading—that one might plausibly follow them and yet diagram arguments incorrectly. Two answers may seem possible, without there being a way to justify one over the other. The approach may seem intuitive, with all the vagaries of intuition. More seriously, one might flat out disagree with an author of a text over the correct diagramming of an argument. But should we feel that a certain diagram does not correctly picture the structure of an argument, how can we *argue* against the diagram unless there are some clear criteria for determining correct answers? If the provided diagramming instructions will not help in this instance, we need to develop *and justify* alternative or revised instructions. But where shall we find that justification except in looking at the theory behind what diagrams are about, the theory of argument structure?

The problem here is not simply how to diagram certain ambiguous, problematic cases. To some extent, ambiguity may be unavoidable, since we are working with proverbially "messy" natural language. We might expect a diagramming technique for natural language arguments to inherit some of the vagueness of natural language. In some instances, what we are trying to diagram may be just plain ambiguous. But it does not follow that all

ambiguity is unavoidable. Nor is the problem how to construct diagrammatic representations of structures we can already clearly define or characterize. The problem goes much deeper than that. The problem is with the very characterization of certain basic argument structures. How certain structures are distinguished has seemed so ambiguous in application as to call the enterprise of structural representation, and so most issues of argument macrostructure, into question.

The central problem confronting the standard approach to argument diagramming is making clear the distinction between convergent and linked structure. Open disagreements arise over whether a particular example is linked or convergent. In [1986], Thomas characterizes linked structure this way:

> When a step of reasoning involves the *logical combination* of two or more reasons, they are diagrammed as *linked*.[12]
> Reasoning is linked when it involves several reasons, each of which *needs the others* to support the conclusion.[13]
> In general, suitably related pieces of evidence *that fit together* to support or justify a given hypothesis, scientific or otherwise, can be diagrammed as linked.[14]

Thomas gives convergent structure this characterization:

> When two or more reasons do not support a conclusion *in a united or combined way*, but rather each reason supports the conclusion *completely separately and independently* of the other, the reasoning is *convergent*.[15]
> If neither reason *needs the other* reason (or anything like the other) in order to support the conclusion, then the reasoning can be diagrammed as *convergent* reasoning.[16]

What are the key words in these characterizations? They are "logical combination," "needs the others," "that fit together," "in a united or combined way," "completely separately and independently." Without the benefit of theory, these are all highly intuitive, ambiguous concepts. Without some explanation of what logical combination—or the lack of it, one reason needing another, or two or more reasons fitting together mean, we can easily imagine persons disagreeing over whether two reasons need each other. Indeed, we might expect situations to arise where we feel two or more reasons need each other *in some sense* to support the conclusion properly, but not in the sense required for linked structure. But how do we explicate that sense?

Thomas offers one other criterion for distinguishing linked from convergent structure—to our mind a lot clearer. He says if

> each separate reason still would support the conclusion just as well even
> if the other (separate, independent) reason(s) were false, and each

separate line of reasoning could still be equally good even if the other
line(s) of reasoning happened to be no good,[17]

then the reasoning is convergent. However, if the falsity of one reason were
to undercut the force of the others, the reasons should be linked. Thomas
of course admits that there will be hard cases to adjudicate, for various
reasons. He also admits the theoretical difficulty here. "Natural logic still
has not fully solved the difficult problem of giving a general, exhaustive
formula for distinguishing linked from convergent inference in natural lan-
guages."[18]

          Thomas is not the only one to have problems with making a clear
distinction between linked and convergent structure. Recent discussions in
the *APA Newsletter on Teaching Philosophy* are significant. In [1984a], Lee
Rowen first characterizes an argument with linked (in her terminology
"conjoint") structure as one where "a conclusion is supported by two or
more premises each of which contributes to the support which the others in
the set give to the conclusion."[19] We have convergent ("disjointly support-
ing premises") structure when the reasons are logically independent, are not
contributing any "logical connection" to the support the other(s) give to the
conclusion.[20] She also speaks of premises giving "partial support."
Frequently, such premises must be linked with supplied suppressed premises
to get complete support. Here again, we note a problem with lack of clarity.
What do "each of which contributes to," "logical connection," "partial
support" mean? (In fairness to Rowen, we should point out that she
develops in [1984b] a criterion for distinguishing linked from convergent
arguments free of such intuitive, ambiguous terminology. We cite her
discussion in [1984a] to illustrate how problematic terminology is associated
with the linked/convergent distinction.[21] In [1984], Robert Yanal said he
used such phrases as "conceptually similar," "in the same line of thought,"
"logically dependent," "fill in the logical gaps," "support each other" to
informally characterize when premises should be linked.[22] Again, we have
rather unclear descriptions of the conditions for linked structure.

          How do these characterizations of linked and convergent argument
structure lead to disagreements or unintuitive determinations of particular
examples? How by following them might we produce "wrong" diagrams?
Let us examine particular cases.

I   Cigarette smoking poses a substantial health risk to the
          smoker. It also poses a risk to those nearby who must
          breathe the smoke secondarily. Therefore people should
          not smoke cigarettes.

Many would regard this argument as having convergent structure, two
separate, independent reasons being given for the conclusion. But surely
although each premise by itself gives some support to the conclusion, taken

together do not we have a stronger case? If so, does not one contribute to the support of the other? Don't they both "fit together"—both report adverse effects of smoking? Aren't they in the same line of thought? Isn't the structure then linked?

In example I, the first premise gives a strong reason for not smoking. The second premise gives a significant reason against smoking in public if not against smoking in general. This suggests that one reason does not need the other to support the conclusion, and makes a convergent diagram plausible. But suppose we had several premises each of which gives only some support to the conclusion?

II   La Petite Coloumb has the best chef in town. The live entertainment there is outstanding. The menu is also quite varied. Thus we should go there for dinner.

Is the structure of this argument linked or convergent? Each premise describes a rather different aspect of La Petite Coloumb. Each independently of the others gives us *some* reason for the conclusion, leading us to think the structure is convergent. But does any of the three, by itself, properly support, give us a good argument for, the conclusion? Would basing our decision to go to La Petite Coloumb for dinner on just one of these factors be hasty? Besides, all three premises discuss positive factors of one and the same restaurant. Does this mean they are in the same line of thought? Is the structure linked?

There is overt disagreement concerning the structure of inductive generalization arguments in the literature. Thomas regards them as linked; Yanal explicitly questions this. Taking

(1) e_1 is an A and a B.
(2) e_2 is an A and a B.
$$\bullet$$
$$\bullet$$
$$\bullet$$
(n) e_n is an A and a B.

∴ (n+1) All A's are B's.

as the paradigm schema for inductive generalizations, we may regard each of (1), (2), ..., (n) as providing a bit of evidence—perhaps a very small bit of evidence for the conclusion (n+1). Since each instance is presumably distinct from the others, each premise presents a separate piece of evidence for the conclusion, indicating convergent structure. Thomas argues that inductive generalization arguments are linked because "the strength of support is much greater when the instances are considered in union together, and each reason needs the truth of the others in order for the conclusion to be supported."[23] Suppose we found an e_j which was A but not B. Then "the support given the conclusion by the other positive instances

would be greatly reduced."[24] Indeed, their support would be undercut altogether. The falsity of the conclusion deductively follows from the truth of e_j is A and not B. We must concede that each separate reason would not support the conclusion just as well if any of the other reasons were false. Applying Thomas' last mentioned criterion for distinguishing linked from convergent structure, such arguments then are linked. But does this show that each premise needs the others to support the conclusion? If we say yes, then how can any inductive generalization support its conclusion unless the premises include a complete enumeration of all instances of A's, together perhaps with the assertion that these are all the A's there are? And here we would have a deductively valid argument, not an induction.

In [1984], Yanal considers the following argument, which he adapts from Thomas, as a problematic instance of distinguishing linked from convergent structure.

III   (1) Forests are cleared to make way for cultivation.
         (2) Food trees are poisoned to leave space for better timber trees. (3) Whenever chimps are near human settlements they are threatened with epidemics. That's why (4) the spread of agriculture and forestry threaten the life of the chimp.[25]

Yanal regards this argument as having convergent structure, although he points out that Thomas diagrams it as linked. Each premise gives some evidence that agriculture and forestry, taken as one activity, threaten the life of the chimp. Each mentions a different factor negatively impinging on chimpanzee welfare. One might object that premises (1) and (3) support that the spread of agriculture threatens the life of the chimp, while (2) gives evidence that the spread of forestry is detrimental to chimpanzees. Don't we have to link these premises together to see why all support saying that the spread of agriculture *and* forestry threaten the life of the chimp? The conclusion in effect is a conjunction, with (1) and (3) supporting one conjunct, (2) the other. This raises the more general question—What is the structure of deductive arguments proceeding by the rule of conjunction:

From   A
           B
To Infer   A & B

Should arguments exhibiting this structure be diagrammed as linked or convergent? Now clearly, unless 'A' entails 'B,' the argument from 'A' alone to 'B' is not valid. The situation is symmetric with respect to 'B' and 'A.' But are 'A' and 'B' by themselves irrelevant to 'A & B'? Doesn't each give us "half" of the information we need for 'A & B'? But if each separately gives us half of what we need, doesn't that mean that each reason

separately supports the conclusion? Or is it because both reasons are needed to produce a valid argument that neither *completely* separately supports the conclusion?

Suppose we grant that arguments proceeding according to the rule of conjunction are convergent. Does that indicate that the following argument is convergent also?

IV   Tom, a Central High School student, won a National
        Merit Scholarship. Mary, another Central High School
        student, also won a National Merit Scholarship. So two
        (at least) Central High School students won National
        Merit Scholarships.

As with a conjunction argument, doesn't each premise, by itself, give us half the information we need for the conclusion? Does this argument then have convergent structure? But does either premise tell us that *two* Central High students won National Merit Scholarships? Don't we need both to support that assertion?

These examples amply illustrate that drawing the distinction between linked and convergent arguments is problematic. To offer a preliminary diagnosis, we see the heart of the problem lying in an ambiguity of the key concept "logical support" and so also of the downward directed arrow in argument diagrams meant to represent it. When we say that a premise P logically supports a conclusion C, do we mean that P gives some evidence for C, that P is relevant to C, or do we mean that P gives good or sufficient (although not necessarily deductively entailing) evidence for it? Likewise, when we draw an arrow from P alone to C in an argument diagram, are we saying P is a reason for C or P therefore C,[26] i.e. P by itself constitutes a complete "case" for C? Now the question of argument strength introduces the issue of modality. To claim that a premise or set of premises gives a strong reason for a conclusion, if the premises are acceptable, or that it gives at most weak support to the conclusion is to make a modal claim. This is to claim something over and above claiming that the premise is relevant to the conclusion. Clearly, a premise can give us some evidence to support a conclusion without giving us sufficiently weighty evidence. Those who tend to look at logical support as making just the relevance claim and the arrow as indicating just that the premise is a reason for the conclusion will tend to favor convergent arguments for all (or all but the last) of our problematic examples. Those who see logical support involving a modal claim and the arrow indicating "therefore," will tend to link the premises in our various examples.

Which interpretation of "logical support" and so which reading of the arrow is correct? A justified answer will come in the context of a theory of argument structure. We shall develop our answer in Chapter Four and

discuss various proposals for distinguishing convergent from linked arguments in its light.

Given the ambiguity of "logical support" on the issues of relevance and modality, and the attendant confusion it causes in sorting out convergent and linked argument structures, Toulmin's approach has one distinct virtue—it draws a clearcut distinction between relevance and modality. To ask the warrant-generating question "How do you get there?", i.e. "How do you get from your data to the claim?" is to ask "Why are those data relevant to the claim?" The primary function of warrants is to explain relevance. They are relevance explaining elements. Modal qualifiers, or as we shall call them modalities, explicitly concern argument strength. With how much force may we assert the conclusion, given the data and warrant adduced in its support? By introducing two distinct types of elements, Toulmin clearly separates and distinguishes these two issues. This could have ramifications for any view of argument structure and an associated dia-gramming procedure, independent of the merits of Toulmin's overall approach.

One virtue of Toulmin's presentation, as we see it, is that it gives some theoretical backing to the distinctions it makes. By seeing argument as involving a quasi-judicial or generalized judicial process, one where different questions will arise at different points in the procedure, Toulmin gives us a rationale for distinguishing various elements in an argument. Different elements answer different questions and so serve different purposes or functions. Difference in function justifies drawing structural differences and adopting distinct ways of representing the various elements of arguments. We might expect, then, that Toulmin's work could make a significant contribution to the theory of argument structure. However, Toulmin's theory is controversial. Some, especially those in rhetoric, find it illuminating.[27] Others, especially in philosophy, have been very criti-cal.[28] Does Toulmin's approach give us any justified insights into argument structure and its theory?

To answer this question, indeed to deal with the problems which have emerged in this section, we need a theory of argument structure. In the sequel, we shall develop such a theory. We shall successively direct our attention to the two central questions: What elements are to be discerned in argument structure? How do these elements fit together? But we must first present our theoretical point of departure. Our theory of argument structure is attendant upon a particular theory or understanding of argument. The motivation for the structural distinctions we make, the framework of our entire approach will be determined by this theory. Hence, it is important that we present it "up front." This we proceed to do in the next chapter.

NOTES

1. These refinements appeared with the first edition of the text in 1973.
2. Thomas diagrams linked structure this way:

$$\text{(P1)} \quad + \quad \text{(P2)}$$
$$\downarrow$$
$$\text{(C)}$$
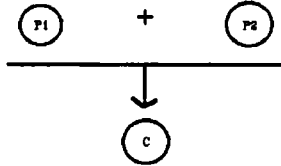
This constitutes only a difference in representational notation from our mode of diagramming linked arguments. Nothing substantive hangs on this difference. Our mode may have the advantage of actually connecting, linking the circles representing linked premises. It is how we represented linked structure in [1988] and other writings, and we prefer to retain it in this essay.
3. See, for example, Scriven, [1976], pp. 41-43; Johnson and Blair, [1977], pp. 176-79; Nolt, [1984], pp. 23-51; Govier, [1985], pp. 125-60; Copi, [1986], pp. 18-28, 38-50; Freeman, [1988], pp. 161-222. Copi introduced argument diagramming into his *Introduction to Logic* text with the sixth edition, [1982].
4. For a discussion of Finocchiaro's and van Eemeren and Grootendorst's diagramming systems, see Appendix.
5. Toulmin, [1958], p. 7, italics mine.
6. Toulmin, [1958], p. 9.
7. Toulmin, [1958], p. 96.
8. This is pointed out especially in Toulmin *et al*, [1984].
9. Toulmin, [1958], p. 98.
10. Toulmin, [1958], p. 101.
11. Toulmin does suggest that his structure can be modified for arguments where a final conclusion C is drawn from a more general statement C', defended by a (fully) structured argument. C, as Toulmin puts it, is one of a number of possible morals we can draw from C'. The structure might look like this:

$$\text{D} \longrightarrow \text{So, Q, C'} \longrightarrow \text{So, C}$$

Since   Unless
W   R

On account of
B
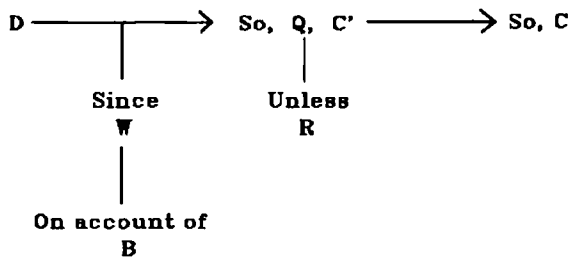
Toulmin does not explicitly present this diagram. We may ask, then, whether he would require the argument from C' to C to be fleshed out into a fully structured argument, at least with an explicit warrant. He might ultimately regard the move from D to C' and one argument, and from C' to C as a second. The point is that with at most a few minor exceptions, Toulmin sees the layout of arguments as fixed.
12. Thomas, [1986], p. 58, first italics mine. According to Thomas, he introduced this distinction in the first edition of *Practical Reasoning in Natural Language*.
13. Thomas, [1986], p. 58, italics mine.
14. Thomas, [1986], p. 59, italics mine.
15. Thomas, [1986], p. 60, all but last italics mine.