

Footnotes

1. The philosophical literature on problems in general is more substantial. Carter has a useful bibliography. See especially Agre, Bunge, Hattiangandi, Nickles, Siitonen, Sintonen. The literature on problem solving is endless.
2. For other points of view on introductions see also Arrington and Rose, Swales and Najjar, Crewe, Schwegler.
3. There are several educators in areas other than rhetoric and composition who have focused not just on problem solving, but on artful problem posing. See Brown; Brown and Marion; Delbecq and Van de Ven; Goldman; Manteuffel and Laetsch; Lyles and Mitroff; Mayer; Sacks; Stewart and Jungck; R. Taylor. On the other hand, the standard literature in psychology has largely ignored problem finding as a cognitive skill (or knack). In *The Handbook of Creativity*, there are two dozen references to pages that address problem solving; the references to problem finding number just six, and only one of those goes beyond a single sentence or two (Robt. Brown, 23 - 24) The two striking exceptions to this generalization are Getzels and Csikszentmihalyi. But see also Mackworth, Guilford, Landau, and Henle.
4. I will later use and explain “prototype” in its current technical sense (Mervis and Rosch; Rosch and Mervis; Rosch 1973, 1978; Lakoff; J. Taylor 1989, 1990; Turner; Winters)
5. It will have occurred to some readers that I have seemed to substitute one metaphor for another: not that of metaphorical space but of commercial transaction. In fact, the use of the concepts of cost and benefit in a commercial transaction is only a specific application of a more general human concept. There are for bears and squirrels costs and benefits of hibernation. But it makes no sense (at last to me) to argue that we therefore look at hibernation as a commercial transaction. There are, however, other possible metaphors. Whichever ones we might use to articulate the model, however, the underlying relationships would have to be the same: X causes Y and person A seeks Z in order to avoid Y. Other readers may have noted that this formulation moves rhetoric away from

confrontational argumentation toward negotiation, a move that some might think contradicts the commercial metaphor, but, I believe, does not. For a reformulation of argumentation as conversation, see Williams, forthcoming.

6. Note that the difference between Cost as an out-of-pocket loss and as an unrealized benefit may be only in the phrasing:

Condition: I do not know the number of stars in the sky.

Cost as threatened loss: Until we find out, we never know the ultimate fate of the physical universe.

Cost as potential benefit: If we can find out, we learn discover the ultimate fate of the physical universe.

As I will suggest later, this choice may not be rhetorically neutral.

7. This notion of problem is obviously relevant to Bitzer's definition of exigence and the rhetorical situation. However, it differs in at least two ways: First, what he calls exigence often has to be created. It is not the case that "The exigence . . . [is] located in reality, . . . objective and publicly observable historic facts in the world we experience, . . . available for scrutiny by an observer or critic who attends to them" (1968, 11). Similarly, it cannot be the case that exigence pre-exists problems, because in some cases, the problem is to create a PROBLEM (1980, 22-24). Patton's constructivist approach is closer to what I offer here.
8. Inevitably, some will read into "privilege" a sense of transcendently better, always to be preferred, and out of that will infer that I imply some rule-like preference. That is not what "privilege" implies. What I describe here is, insofar as the research indicates, is simply predictable cognitive behavior.
9. 9. For our purposes, the fixed levels are pragmatically equivalent to underlying structures generated by the familiar generative rules of a transformational generative grammar: S ➔ Subject + Predicate, rather than S ➔ NP + VP. For our purposes, a "grammar" of style is better served by defining "subject" as a fixed segment with elements moving through that segment, rather than defining subject as a purely syntagmatic relationship. What we thus have is a hybrid of a slot-filler grammar and a base rule - transformational rule grammar. Those who might throw up their hands at that cavalier approach toward a theoretical model of style might refer to the end of Book 1, Chapter 7 of Aristotle's *Nicomachean Ethics*, where he addresses the issue of ends, means, and appropriate precision.
10. This is the latent principle behind Williams, 1994.

11. Prototype theory may also explain the durability of the five-paragraph essay: it consists entirely of well bounded prototypes. The essay itself has a prototype – introduction, three-part body – conclusion. Each section consists of another well-bounded prototype: the single paragraph. The five-paragraph essay causes problems later because it does not prepare students to create units of discourse for which we have no good prototypes – in particular, sections. We have a clear image of what a prototype essay looks like, what a prototype paragraph looks like, what a prototype sentence looks like. But what does a prototype section look like? We have no clear image. That is why papers with several sections that each consist of several paragraphs can be so hard to process, if we have no way to image their boundaries.
12. There are other kinds of disruptions: a description of a strange event, newspaper stories that report disasters, etc. – the supermarket tabloid that reports about UFO's contacting Elvis' ghost.
13. Stasis is the rough rhetorical analogue to Kaufer and Geisler's "consensual knowledge," the received state of affairs that the writer attempts to change. Similarly, Disruption may be the rhetorical analogue to their "staking systematic claims" and Cost the effects of staking a knowledge claim on the structure of community knowledge. Again, this is different from the term stasis, as currently used in rhetorical theory.
14. This formulation seems to leave Stasis empty when a text that opens directly with a statement of the PROBLEM. But if the PROBLEM is *already known to the community*, then that PROBLEM has all the characteristics of Stasis – shared consensus, whatever the community shares. Disruption would be the announcement that the PROBLEM has been solved. I am less than completely confident about this formulation, but it allows us to fit evidence to the model and thereby preserve it.
15. Although I list Gist of Solution and Promise of Solution as alternatives, the cognitively privileged choice is to state the Gist of the Solution at the end of the introduction.
16. I omit, for example, a common element that I concluded my own introduction with – a roadmap of the structure of this essay. Jeanne Fahnestock has also pointed out to me that some writers will begin by establishing their own credibility through an anecdote apparently unrelated to the substance of what follows. Needless to say, this essay does only some of the groundwork for more research on this topic.
17. See R. Brown for a more general account of narrativity and rhetoric.
18. There is implicit here a notion of "recoverability," roughly analogous to deletion in transformational-generative grammars. I do not assert

complementarity, only analogy Under any circumstances, it is always a mistake to bind oneself to a set of theoretical conditions and constraints when the theory that one binds oneself to is not in fact appropriate to the object one is trying to account for. The theoretical constraints on transformational-generative grammars are simply irrelevant to the object of study here.

19. It is in this sense that Bitzer's claim that "every exigence has an observable factual component" (1980, 24) cannot be the case. It is particularly not the case that "My colleague in physics who discovers a principle and composes a report about his discovery needs no mediating audience. I seek to express my views on the nature of rhetoric; my verbal representation of my thoughts does not need to engage a mediating audience. In these and similar instances exigencies are not rhetorical" (1980, 27). Bitzer is concerned entirely with tangible problems; i.e., no audience to acknowledge the problem. In this sense, I am more sympathetic to Scott's responses to Bitzer (particularly 56-59). Bitzer, however, is good on the distinction I make between being interested in and having an interest in (1980, 28).
20. These difficulties, I think, speak more directly to the issue of "academic discourse" and its discontents than do concern with tone, vocabulary, or other such accidental features that are often cited as characterizing academic vs. non-academic writing. They are trivial by-products of attitude, not defining features. One of the defining features of academic discourse is that we pursue it for the sake of creating more discourse. The most telling sign that a student is not ready to participate fully in academic discourse is not the "inappropriate" use of the first-person singular or not enough nominalizations but rather the conclusion that attempts to shoehorn a pure conceptual (i.e., academic) problem into a tangible one, something on the order of "Therefore, if President Clinton could understand the strengths and weaknesses of Oedipus and Lear, he would be a better leader." Nothing wrong with that impulse. But it bespeaks someone not yet secure in the idea that solving a conceptual PROBLEM is worth the trouble. Furthermore, these several pages, I think, speak more directly to the matter of socialization into academic discourse than do some other discussions I have seen (in particular, Flower 1990, 1988; Carey and Flower). The definition of "academic" discourse offered there does not distinguish academic discourse from most other kinds and does not touch on what I think is the distinguishing feature of academic writing: the finding and posing of a PROBLEM whose solution has no necessary connection to any tangible problem, but only to the network of beliefs, knowledge, and understanding of a community of discourse. Moreover, a good deal of the on-line rhetorical problem solving

that the protocols in these studies represent seems at least to me a struggle not just toward some interesting “thesis,” but toward the definition of problem that I have offered here. As a consequence, as I read those protocols, I was constantly beating back the impulse to say out loud, “What you are struggling toward – and what everyone studying you in fact wants you to find – looks like this.” None of the records of those struggles will provide much insight into the cognitive processes of writers until those writers being studied understand *the nature* of what they are struggling toward. It is as if students in mathematics were struggling to solve a problem that only calculus could help them solve, but they didn’t know calculus, and so what was being studied was their frustration in not being able to solve a problem the solution to which was beyond them until they understood calculus.

21. The strongest claims from this camp are, on the face of them, preposterous (in the original sense of that word):

Our students are . . . not dependent on the results of linguistic science to learn to write. . . . Development of good writing style occurs via reading for meaning and writing to convey meaning. It has happened this way to millions of people, and there seems to be no way to shortcut the process. . . . There is no reason to try to accelerate or replace this natural process: It is efficient, rapid enough when input is provided, less expensive than its substitutes, and by far less tedious (Krashen, 37).

22. In 1992 and 1993, Greg Colomb and I had the good fortune to work with the faculty at Knox College on these questions and others. Many of the faculty seemed especially interested in applying the heuristics of problem-posing, and it now appears to be a fixture across several departments and levels of instruction. In the judgment of many of them, it has made a substantial positive difference in the performance of their students. More information can be gained from Lane Sunderland, Department of Political Science, Knox College, Galesburg, Il. 61401.
23. I am indebted to Greg Colomb and his students for this point.