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Commentary on Reed

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In Response To: Chris Reed's *Building monologue*

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The problem of premise availability facing the designer of a monologue argument is vitally important for many applications of natural language generation by computers, as Reed has shown. And I certainly agree with his analysis in assigning central importance to argument diagrams of the kind studied by Freeman (1998), and argumentation schemes of the kind studied by Hastings (1963) and Kienpointner (1992). But I must admit I have not thought too deeply about this problem myself, and wondered how the problem could be solved in a specific case, or set of cases, representing applications of the theory.

One very important kind of application would be the case of a student or researcher writing an argumentative essay. This would be a monologue case, because the student has to pick a topic or question, and then think out how he could best present the data he has found so far to prove or support some designated thesis. As such then, the type of dialogue would be what I have called persuasion dialogue. The student's task is to find some interesting thesis and then give the strongest possible reasons supporting the truth of that thesis. But of course dialogue is also implicitly involved, as I would say it always is in such cases, because the student must also formulate the strongest possible objections to his arguments , and then try to counter these objections as persuasively as possible. This is basically the task of a written essay or paper, of the kind we are all so familiar with.

The student has a dual problem to confront. One problem is to find an interesting thesis and argue for that. But the other is to collect as much relevant information as possible, from reliable sources that can be documented adequately. This part could be called the research component, or collecting of data. It is always a problem with writing any kind of essay of this sort that you have to divide your time between these two tasks. At some point, you have no more time to collect data, and you have to start writing. But then after having written a rough draft, you may have to go back to the research task, and look up some information that has now turned out to be vital to your line of argument.

The problem of premise availability is surely a cycling back and forth between these two tasks. First, you have a thesis to prove, T. To support T, you need to find a network of linked and convergent arguments based on premises that can be supported by the given evidence. The process for this task is surely abductive in nature. The student has to reason backwards, or look for best explanations, among the set of propositions that he has already assembled as his data set. But in some instances, this process will pick out propositions not in the data base. Then the student will have to do more research, and try to find sources that support these propositions or not.

Normally in persuasion dialogue, the task is to find premises that your

respondent will accept, or as we say, is committed to. But that is the problem when you are dealing with an individual. If you are doing a history essay, then your professor will tend to accept whatever the main experts in the field are also generally inclined to accept. So your problem is not just one of convincing this individual professor, but of writing a history essay of a sort that would be convincing to professional historians. Let's consider a specific example. Suppose you have decided as your thesis a counterfactual proposition : if certain individuals in German politics has resisted Hitler more strongly, instead of acting on their own personal interests, Hitler would never have gotten into power. To argue for this thesis, you have to carry out two tasks. First, you have to collect a lot of documented facts about what happened in German politics in 1933, just before Hitler came to power. Then you have to use these supposed facts as premises to support you thesis. As part of the second task, you have to reply to certain objections to your arguments. For example, someone might object that popular support for Hitler was so strong, he would have gotten into power anyway. You might reply that popular support for the Nazis was in decline at this time, and that if Hitler could have been held back just a little while longer, he never would have gotten into power. But once this issue has been raised, and both sides looked at, you may be well advised to do some further research. You may have to dig up some more facts on the extent of popular support for the Nazis, just before and during the time of Hitler's appointment as chancellor of Germany. Such facts would be election statistics and any poll outcomes that were known.

Thus I would say that the problem of premise availability involves two related subtasks of argument construction in monologue. One is the abductive searching for premises, and links between them and your thesis, among your existing knowledge base. The other is the task of adding, at strategic points, to your existing knowledge base. These could be called the abductive task and the information-seeking task, respectively. Of these two, the information-seeking task is less analytically exciting. You find gaps in your argumentation, and the task is simply one of collecting the relevant information, if you can, that would seal up the gaps. The abductive task is more exciting. How do you construct a "logic of discovery" to search out the best evidence needed to support your given thesis? Can such a task be automated? It looks like it can, and it appears that the current research in knowledge based systems is already quite familiar with this type of task. It is the famous technique of "reasoning backwards" or abduction. As Reed shows, it partly uses deductive and inductive reasoning, of the kinds familiar for so long in logic. But it also requires the new argumentation schemes - forms of reasoning that are contextual and nonmontonic - and are neither deductive nor inductive in nature. They represent forms of intelligent guesswork of the kind Peirce called abductive. They give a small probative weight for or against a conclusion that is not itself conclusive, but that only has some place in a much larger body of total evidence in a case. What defines "total evidence" is a relative matter, and can be subject to change as new information comes into a case. What is vital in any given case is the argument diagram. You not only have small argument diagrams at the local level, in relation to any localized claim, argument, or

counter-argument. You also have two global argument diagrams in any given case. One represents the total evidence for the given thesis. The other represents the total evidence against that thesis, or for the opposite thesis.

What is the best computational method for carrying out the abductive task I do not know. What I do know is that any good method, or even a bad method, of this kind would be extremely valuable as a piece of educational technology. It would be valuable not only for its uses in educational software, but also for the theoretical light it would throw on methods of informal logic. A method of this kind would throw a lot of light, for example, on the problem of handling linked and convergent arguments in argument diagrams, and the problem of enthymemes. In fact, I think that the best solutions to these problems will only be forthcoming by a joining of forces between computer scientists and those now working in the field of argumentation studies. So I close my commentary by commending Reed's research and his use of work in argumentation studies and informal logic. I would like to see much more of this kind of cooperative research, and hope to encourage it as best I can.

References

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