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# The Culture of Spoken Arguments

David Hitchcock  
*McMaster University*

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# The Culture of Spoken Arguments

DAVID HITCHCOCK

*Department of Philosophy  
McMaster University  
Hamilton, Ontario, L8S 4K1  
Canada  
hitchckd@mcmaster.ca*

**ABSTRACT:** 37 arguments were selected by random sampling methods from calls to radio and television phone-in programs. I discuss whether my general theory of inference evaluation applies to them and how frequently they exemplify a recognized argument scheme. I also compare their dependence on context, their complexity and their quality to those features of a previously studied sample of 50 scholarly arguments.

**KEYWORDS:** argument scheme, culture, inference evaluation, scholarly arguments, spoken arguments

## 1. INTRODUCTION

In previous work (Hitchcock 1985, 1992, 1994, 1998) I have developed a comprehensive approach to inference evaluation, i.e. to the evaluation of the link between one or more reasons and a conclusion drawn directly from them. On this approach, one asks whether some covering generalization of the argument is non-trivially acceptable. By a *covering generalization* is meant a generalization of the material conditional whose antecedent is the conjunction of the reasons and whose consequent is the conclusion. By *being acceptable* is meant deserving acceptance; a generalization may deserve acceptance either without qualification or as holding in most cases or as holding in the absence of some exception-making circumstance (i.e. *ceteris paribus*). The acceptability of a generalization is *non-trivial* if it rests neither on the unacceptability of the conditional's antecedent nor on the unconditioned acceptability of the conditional's consequent.

The covering generalization approach to inference evaluation is an alternative to an approach that requires a good inference to be formally valid, perhaps after supplementation of the reasoning with supposed "implicit" or "unexpressed" premises.

In one respect the covering generalization approach is more restrictive than the formal validity approach: the acceptability of the covering generalization must be non-trivial. Thus the formally valid argument 'you are sitting; you are not sitting; therefore, Tom is in the corner' (a medieval example) would have a bad inference because (a) its covering generalization 'if p and not p, then q' is acceptable only trivially, because its antecedent 'p and not p' is unacceptable, and (b) it has no other covering generalization that is non-trivially acceptable.

In other respects, the covering generalization approach is more permissive than the formal validity approach. For one thing, it counts formally invalid inferences as good when they have a covering generalization that is non-trivially acceptable as a matter of

either meaning or fact or normativity. The argument ‘Kim is a woman, so she is not a bachelor’ has a good inference, because the covering generalization ‘if x is a woman, then x is not a bachelor’ (i.e. ‘no woman is a bachelor’) is true by definition; I shall call such inferences ‘*semantically valid*.’ The argument ‘it is raining, so there are clouds overhead’ has a good inference, because the covering generalization ‘if it is raining at time x and place y, then at time x there are clouds over place y’ (i.e. ‘there are clouds overhead when it rains’) is true as a matter of fact. The argument ‘you are guilty of a heinous crime, because with malice aforethought you deliberately brought about the death of another human being without any justification’ has a good inference, because the covering generalization ‘if x with malice aforethought deliberately brought about the death of another human being without any justification, then x is guilty of a heinous crime’ is normatively correct. I shall call inferences of the latter two types ‘*materially valid*.’

Another respect in which the covering generalization approach is more permissive than the formal validity approach is its allowance of overridable inferences. I use the term ‘overridable,’ following Robert Pinto (2001, p. 28), to describe an inference that can be defeated by further information that shows that the conclusion is false or otherwise unacceptable even though the reasons offered in its support are true. A standard example is the inference “all observed swans are white, so all swans are white,” which was overridden by the discovery of the black swans of Australia. Here the covering generalization “if all observed birds of a genus are of a certain colour, then all birds of that genus are of that colour” is true for the most part, as we can determine by reflecting on past sequences of observations of such genera of birds as penguins and ravens. So the generalization, on the approach I favour, licenses the inference that all swans are white—or at least it did so until the black swans of Australia were discovered. I shall call inferences ‘*probabilistically valid*’ if they are licensed by a covering generalization that is true for the most part, though not always.

General evaluations, prescriptions and classifications are subject to exceptions of a different sort, namely, where special circumstances obtain. Killing another human being is morally wrong, generally speaking, but one can argue for exceptions in the case of justified defence of oneself or someone else, or more controversially in the case of voluntary euthanasia or capital punishment. So the inference “Brutus killed Caesar, so Brutus did something morally wrong” is a good one, as far as it goes, but it can be overridden by referring to special circumstances surrounding Caesar’s assassination that make it an exception to the general principle that killing another human being is morally wrong. In contrast to factual generalizations like that about the colour of birds, general principles of evaluation, prescription and classification cannot be described as true for the most part, since there is no determinate class of entities to which they apply. Rather they are described as holding ‘*ceteris paribus*’ or ‘other things being equal’, meaning that they hold unless the situation to which they are being applied has some exception-making feature. I shall call inferences ‘*valid ceteris paribus*’ if they are licensed by a generalization that holds in the absence of an exception-making circumstance.

The covering generalization approach fits our habits of reasoning and argument better than the formal validity approach. We rarely reason or argue in accordance with formally valid patterns. Further, if we think back on a just completed piece of reasoning where we have worked out a conclusion for ourselves, we will generally notice both that

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the reasoning is not formally valid and that we are not conscious of having mentally suppressed an assumption whose addition as a premise would make it formally valid. So it is implausible to hold that such reasoning uses implicit premises, and thus implausible to hold that similar reasoning addressed to others uses implicit premises. Further, the covering generalization approach avoids the difficulties of attributing to a piece of reasoning a premise that is not stated in the reasoning: how do we know that such an unstated proposition is *really* part of the basis for drawing the conclusion, rather than some other non-equivalent proposition whose addition as a premise would also make the reasoning formally valid? We could take the logical minimum, which is the material conditional whose antecedent is the conjunction of the stated reasons and whose consequent is the conclusion, but most approaches to argument reconstruction generally supply something stronger than the logical minimum, in which case the justification of the choice becomes a pressing issue. The covering generalization approach avoids the problematic aspect of argument reconstruction by making the search for an inference-licensing covering generalization part of argument evaluation, namely, the part that consists in determining whether the conclusion follows from the reasons offered in its support. A piece of reasoning to a conclusion might have many covering generalizations; the evaluative task is to discover which if any of them are acceptable, and with what qualification. It may however be necessary to supplement the stated reasons with particular information present in the immediate context of the reasoning, in order to provide a basis for constructing a plausible covering generalization, or even any generalization at all.

The claim that the covering generalization approach fits our habits of reasoning and argument is empirically testable. For a corollary of the approach is that a conclusion follows only if it has a topic in common with at least one of the reasons from which it is drawn. And, because of the non-triviality condition, an inference-licensing covering generalization must generalize over at least one such shared topic. The covering generalization approach would therefore imply, assuming that people generally reason and argue in sensible ways, that reasons used to derive a conclusion share a common topic with the conclusion. Constructing covering generalizations over such a common topic and evaluating it for acceptability should produce an evaluation of the link between reasons and conclusion that corresponds to our naive judgments arrived at independently of the covering generalization approach.

Some years ago (Hitchcock 2002), I tested the covering generalization approach for applicability to inferences in scholarly books. I used random sampling methods to extract 50 inferences from the books in English housed in the library of McMaster University, a research-intensive university. Of these 50 inferences, 49 had a common topic, and I was able to form on its basis the most plausible covering generalization I could find and use it to determine whether the argument was valid and if so in which way. I concluded that the covering generalization approach was indeed applicable to scholarly arguments.

In the present paper I test the applicability of the covering generalization approach to inferences made by people in everyday speech. For this purpose, I used methods of stratified random sampling to identify 37 inferences made by callers to radio and television talk shows broadcast in and around Hamilton, Canada in the spring of 2003. After setting out these arguments in a standard format, I searched for a topic common to

the reasons and conclusion and generated what I took to be the most plausible covering generalization over that topic, then discussed the acceptability of this generalization, using its acceptability status as basis for evaluating the argument as formally valid, semantically valid, probabilistically valid, *ceteris paribus* valid or invalid.

## 2. METHOD

Ten talk shows broadcast in and around Hamilton, Canada were identified. For each show, a random number generator was used to generate five start times for taping within the nine-week period from March 3 through May 4 inclusive of the year 2003. The 50 shows so chosen were taped from the start time until the end of the show, and in some cases to the beginning of the next show, as a basis for extracting inferences made by callers to the shows.

The projected sample of 50 inferences, five from each of 10 talk shows, ended up as a sample of only 37 inferences. One of the 10 programs turned out not to be a talk show at all, but a nightly business report, so its five tapings were not used. Six tapings of talk shows contained no inferences, so they too could not be used. (Incidentally, these six tapings without inferences included four of the five tapings of the only American talk show in the sample, with the result that all but one of the arguments transcribed and analysed in this study were arguments by Canadians.) Two tapings were scheduled for Good Friday, when regular programming was pre-empted, so those tapings were not made. Thus 13 of the projected 50 tapings did not produce an inference for analysis and evaluation.

In addition, on one occasion the wrong program was taped by mistake, with the result that there are six tapings of that program and only four of the other program. Two tapings contained no inferences by callers, but did contain inferences by other people, which were used instead.

In most cases, the present author and the research assistant who did the taping (Amy Ohler) transcribed the tapes independently and independently identified the first inference by a caller on each tape. Where they differed, the present author made a decision about which inference to analyze and evaluate. In some cases, the transcription was done only by Amy Ohler; in most of those cases, the present author checked the transcription against the tape and made corrections where necessary.

For this task of identification, we used the same concepts of argument and inference, and the same criteria for detecting and standardizing them, as in the previous study of inferences in scholarly books (Hitchcock 2002). A verbal inference is a discourse in which someone draws for himself or herself a conclusion on the basis of one or more premises; in the present study, the person drawing the conclusion was invariably the person speaking, although in principle it could have been another person whose discourse was being reported, by quotation or paraphrase. Such a person could be said to state what he or she thinks, then explain why he or she thinks this; the supporting reason(s) could of course precede the conclusion. An argument is a discourse in which someone not only draws an inference for themselves but also invites their hearers to make an inference; in the present study, the author of the argument was invariably the person speaking, although it might have been another person whose argument was being reported. Further information about the criteria used to identify inferences and arguments

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in discourse, including criteria used to decide on difficult cases, can be found in the preceding study (Hitchcock 2002).

A rather full transcription of the relevant portion of each taping used was made, to enable the reader of this article to appreciate the context of the inference or argument. In some cases, the inference or argument occurred in the context of a back-and-forth discussion between the talk show host and the caller, a discussion which sometimes was quite testy. Such discussions were also transcribed, to provide a small database that might be useful to other investigators interested in exploring questions about spoken inferential and argumentative discourse.

The present author then supplied a description of the context, a description of the issue addressed by the caller's inference or argument, and a preliminary analysis of its structure. The inference or argument was then extracted in the following standard form:

*Premise(s):*

*Conclusion:*

The conclusion and each premise were written exactly as they were spoken, with the following modifications. In the transcription, we often omitted pauses, expressions of hesitations and repetitions; where they were transcribed, they were omitted in the standardization. Inferential indicators such as '*because*' and '*so*', which were by far the most common inferential indicators in our sample, were omitted from the standardization, as were modal qualifiers like *must* and *I think that* which indicate the claimed strength of the inference from premise(es) to conclusion. Contextual information needed to clarify the reference of pronouns, noun phrases and so on was supplied in square brackets. Material interpolated to fill out an elliptical text was put in angle brackets. In five of the 37 cases, an additional implicit premise was supplied. Otherwise, there were no additions to or subtractions from what was spoken.

Once the inference or argument had been set out in standard form, the present author then supplied a statement and evaluation of its most plausible covering generalization. The analyses and evaluations so produced were then tabulated. In the tabulation, various features of each inference or argument were recorded by the present author: its date, the talk show program where it was uttered, the topic, the presence or absence of explicit cues in the form of premise indicators or conclusion indicators, the type of inference indicator where there was one, how many premises were given argumentative support, whether further consequences were drawn from the conclusion, the validity status according to the typology described in my introduction, whether it was necessary to add unstated information as an additional premise before supplying a covering generalization, the argument scheme exemplified by the inference or argument, the strength if any claimed for the link between reasons and conclusion, the effect on the validity status of a multi-premise inference or argument of eliminating or negating a premise, and whether the discourse was an inference or an argument. Judgment was required in supplying unstated information as an additional premise, selecting the covering generalization, evaluating it, classifying the result of the evaluation according to the previously mentioned typology of validity statuses, identifying an argument scheme to which the inference or argument belonged, estimating the effect on the validity status of eliminating or negating a premise, and determining whether the speaker was arguing

for some claim or merely reporting their own reasoning. Another person making the same decisions about the 37 spoken arguments and inferences might very well come up with different entries in the tabulation and therefore with different descriptive statistics concerning them.

In cases where the inference or argument was part of a complex inference or argument, the first complete inference or argument spoken by the person was used as the basis of the evaluation using the covering generalization approach that is reported in the results section of this article. However, the other inferences in such complex discourses were also extracted in standard form and evaluated using the covering generalization approach. Those analyses and evaluations appear in the appendix to this article.

### 3. RESULTS

It was possible to apply the covering generalization approach to all 37 inferences and evaluations used as the basis for testing the applicability of the covering generalization approach to spoken arguments and inferences. In five of the 37 cases, it was necessary to supplement the stated reasons with additional information found in the immediate context or with background information that the audience would be easily able to supply (such as the information that after March 19 the United States was at war with Iraq but Canada was not). Application of the covering generalization approach often involved substantive judgments about the acceptability of the most plausible covering generalization, judgments that in some cases are probably controversial. Details can be found in the appendix to this article.

Table 1 summarizes the characteristics of the 37 spoken arguments and inferences used as a test, with respect to a number of variables: date, program, topic, verbal cues if any to the presence of an inference or argument, number of premises, number of those premises for which support was offered, whether a further inference was drawn from the conclusion, the validity status of the inference or argument, whether it was necessary to add one or more unstated premises before evaluating the inference, the argument scheme if any to which the inference or argument belonged, the strength if any that the speaker claimed for the inference, the effect on the validity status of eliminating a premise of a multi-premise argument or inference, the effect on the validity status of negating a premise of a multi-premise inference or argument, and whether the discourse was an argument or an inference. Following this table there are comparisons of the results on each of a number of these parameters with results of the previous study of inferences in scholarly books.

<i>Date</i> <sup>2</sup>	<i>P</i>	<i>Topic</i>	<i>Cue</i>	<i>#Pr</i>	<i>S?</i>	<i>C?</i>	<i>V</i>	<i>A?</i>	<i>Type</i>	<i>St</i>	<i>E?</i>	<i>N?</i>	<i>A/i</i>
03-03	S	dogs	c/pa	1	0	y	p	n	ce	-	-	-	A
03-04	N	clubs	-	1	0	y	i	n	ipe	s	-	-	i
03-04	O	fries	-	5	0	n	i	n	pc	n	-	-	A

<sup>1</sup>For a guide to the abbreviations, see the end of the table.

<sup>2</sup>All dates are in the year 2003, and in the format MM-DD.

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03-04	T	taxes	c/pa	3	0	y	i	n	md	-	-	-	i
03-14	A	Iraq	-	2	1	n	i	n	pc	-	-	-	A
03-14	A	Iraq	p/pa	1	1	n	m	n	pc	-	-	-	A
03-14	N	Israel	c/pa p/pa	2	1	n	i	n	phd	n	-	-	A
03-20	B	accent	-	2	0	n	m	y	ec	-	i	i	A
03-21	A	corruption	-	2	0	n	i	n	pc	-	-	-	A
03-23	C	Iraq	c/v	6	1	n	c	n	aa	-	w	w	A
03-24	G	Iraq	-	3	0	y	i	n	gi	-	-	-	A
03-24	O	Iraq	-	1	0	n	i	y	aa	-	-	-	A
03-25	S	movies	-	1	0	n	p	n	-	-	-	-	A
03-27	G	Iraq	c/v	2	0	n	c	n	pc	-	0w	iw	A
03-28	B	Iraq	-	5	0	n	f/i/f	n	mt/ce /mt	-	---	---	A
03-28	A	violence	c/pa	1	0	n	c	n	pc	-	-	-	A
03-30	C	Iraq	-	1	0	y	s	n	ec	s	-	-	A
03-31	O	azaleas	c/pa	4	0	n	m	n	pc	s	0iw w	0iii	A
04-01	N	bankrupt	-	1	1	n	c	n	pc	-	-	-	A
04-02	T	eating	p/pa	3	0	n	i	n	pc	s	-	-	A
04-03	W	smoking	-	1	0	n	s	y	ec	-	-	-	A
04-06	C	epidemic	c/pa	3	1	n	c	n	ec	-	ww 0	ii0	i
04-09	G	epidemic	c/pa	7	1	n	i	n	ec	-	-	-	A
04-09	T	Iraq	p/pa	2	0	n	p	y	ce	n	ww	ww	A
04-11	B	smoking	-	1	0	n	c	n	aa	-	-	-	A
04-11	O	Iraq	-	1	0	n	m	n	ce	-	-	-	A
04-15	B	rewards	c/ca	1	0	y	c	n	gi	-	-	-	A
04-20	C	epidemic	c/v	4	0	y	s	n	se	-	00 wi	00 wi	A
04-23	B	epidemic	-	2	1	n	f	n	mp	-	w	w	A
04-24	G	epidemic	-	9	0	n	c	n	pc	-	000 iii0 ww	000 iii0 ww	i
04-24	S	Iraq	c/v	3	0	n	i	n	gi	n	-	-	A
04-24	T	religion	c/pa	3	0	n	c	n	pc	-	iw w	iw w	A
04-25	S	literacy	c/pa	3	0	n	i	n	cc, gi	-	-	-	i
04-25	S	Taxes	-	2	1	n	c	n	pc	-	0w	0i	A
04-28	B	shaman	-	1	0	n	i	y	aa	-	-	-	A
04-29	N	taxes	c/pa p/pa	2	0	n	f	n	mp	-	w	i	A
05-04	C	retire	c/pa	1	0	n	i	n	pc	-	-	-	A

P = program: A. APTN News (Aboriginal People's Television Network, 8 to 9 p.m. F)

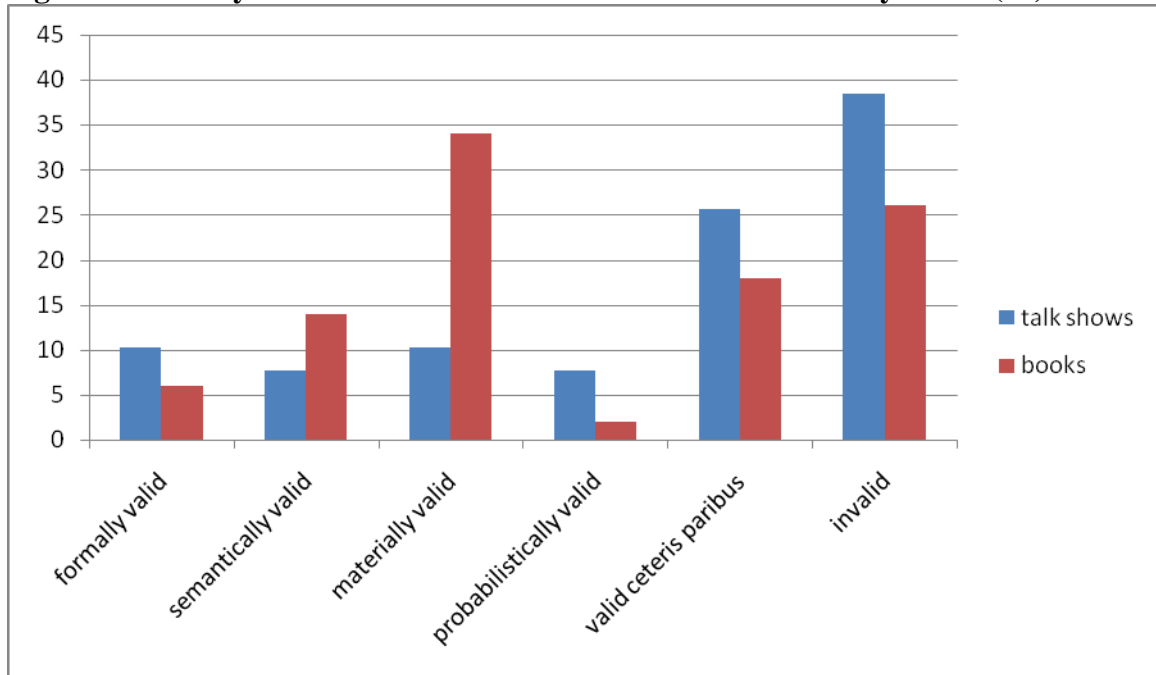


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- B. Bill Carroll Show (CFRB Toronto, 1010 AM, 9 to 11:50 a.m. M-F)  
C. Cross-Country Checkup (CBC Radio One, Toronto 99.1 FM, 4 to 6 p.m. Sunday)  
G. Roy Green Show (CHML Hamilton, 900 AM, 9 a.m. to 12 noon M-F)  
N. The Nightside with Jim Richards (CFRB Toronto, 1010 AM, 10 p.m. to 1 a.m. M-F)  
O. Ontario Today (CBC Radio One, Toronto 99.1 FM, 12 noon to 2 p.m. M-F)  
S. Larry Silver Show (CHML Hamilton, 900 AM, 12 noon to 3 p.m. M-F)  
T. Randy Taylor Show (CFRB Toronto, 1010 AM, 7 to 9 p.m. M-F)  
W. Western New York Live (ABC television Buffalo, Cable 9, 4 to 5 p.m. M-F)
- Cue* = verbal cue to presence of inference or argument. - = none. Otherwise, before slash:  
p = premise indicator, c = conclusion indicator; after slash: pa = particle (e.g. “so”), v =  
verb or verb phrase (e.g. “reveals that”).
- #Pr* = number of premises.
- S?* = number of premises supported by argument
- C?* = inference drawn from conclusion?: y = yes, n = no.
- V* = validity status: c = valid ceteris paribus, f = formally valid, i = invalid, m = materially  
valid, p = probabilistically valid, s = semantically valid.
- A?* = premise added for evaluation?: y = yes, n = no.
- Type* = type of argument (i.e. argument schema): - = no discernible type, cc =  
classification by criteria, ce = cause-to-effect reasoning, ec = evaluation by criteria, gi =  
generalization from instances, ipe = inference to a possible explanation, md =  
mathematical deduction, mp = modus ponens, mt = modus tollens, pc = prescription by  
criteria, phd = prediction from historical data, se = semantic entailment
- St* = strength of link claimed by author: n = necessitation, p = probabilification, s =  
suggestion, - = no claim.
- E?* = effect on link strength of eliminating a premise: 0 = no change, i = invalidation, w =  
weakening, - = irrelevant (only one premise, or invalid). (More than one entry reflects  
different effects for different premises.)
- N?* = effect on link strength of denying a premise: 0 = no change, i = invalidation, w  
=weakening, - = irrelevant (only one premise, or invalid). (More than one entry reflects  
different effects for different premises.)

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**Figure 1: Validity status of inferences in talk shows and scholarly books (%)**



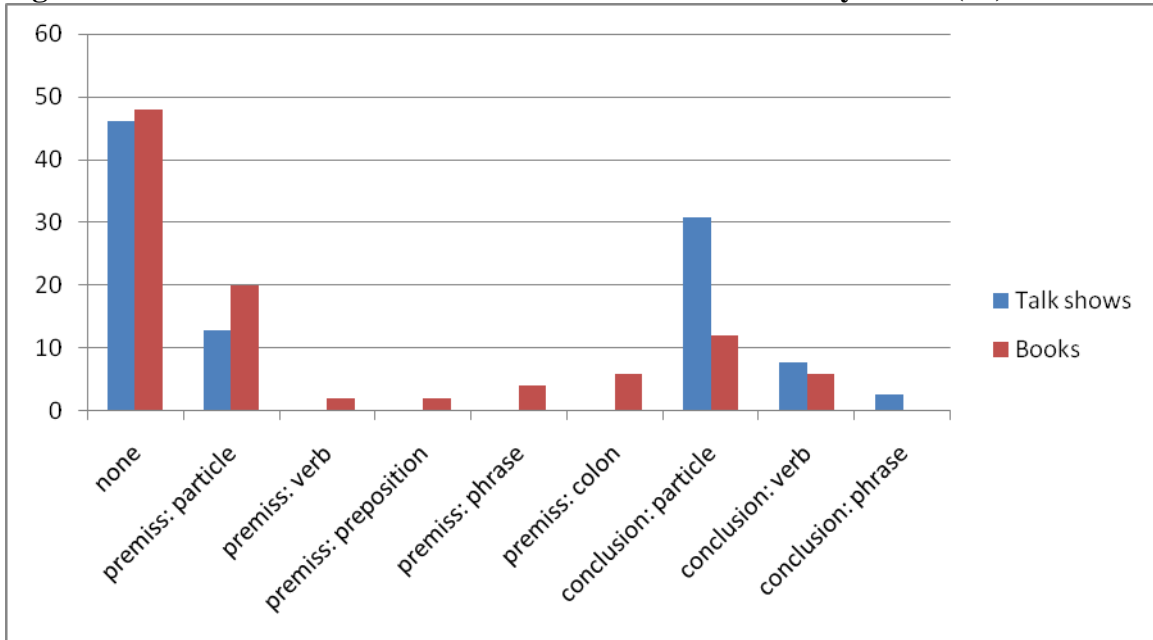
As might be expected, a far higher percentage of inferences were invalid in the talk show sample than in the scholarly book sample: 38.5% compared to 26%. Of the valid inferences, a somewhat higher percentage of inferences were valid *ceteris paribus* in the talk show sample than in the scholarly book sample: 25.6% compared to 18%. Correspondingly, far fewer inferences were materially valid in the talk show sample than in the scholarly book sample: 10.3% compared to 34%. With respect to the other three types of validity (formal, semantic, probabilistic), there were negligible differences. In particular, rather surprisingly, four of the inferences in the talk show sample (10.3%) were formally valid: there were two *modus ponens* inferences and two *modus tollens* inferences. Figure 1 shows the comparison with respect to validity status. No attempt was made to determine whether differences were statistically significant, since the application of tests of statistical significance presupposes that the samples are randomly selected from their respective populations or universes, a presupposition that the two studies do not satisfy, despite the randomization methods used in the selection of the samples. The reasons why the scholarly books sample is not a random sample of inferences in scholarly books are given in (Hitchcock 2002). The talk show sample was taken during a particular time frame, in a particular geographic location, using words spoken in all but one case by people from one country, Canada, by people speaking on talk shows. People speaking at other times or in other locations or not on talk shows had no chance of having their spoken inferences included in the talk show sample. So generalizing to spoken arguments and inferences from the present sample is problematic; at most the results are suggestive. In particular, the sample is not a random sample of all spoken inferences.

In only five of the 37 inferences (13.5%) was it necessary to supplement the stated premise or premises with additional background information before forming a covering generalization. Rather surprisingly, the frequency of such supplementation was considerably less than the frequency of supplementation in the previous study of written

arguments in books, where 13 out of the 50 inferences (26%) required supplementation before a covering generalization could be produced.

Speakers in the talk show sample used verbal cues to signal the making of an inference about as often as writers in the scholarly books sample: 53.8% of the time compared to 52%. Their repertoire of verbal cues was however much more limited than that of the writers. Only one sort of premise indicator was used, the particle ‘because.’ One sort of conclusion indicator predominated, the particle ‘so’, which occurred in 11 of the 16 cases where a conclusion indicator was used, in one case followed by the word ‘therefore.’ In the remaining five cases, the following conclusion indicators occurred once each: the word ‘then’, the verb phrase ‘for that reason I believe it is justified that’, the verb phrase ‘that is why’, the verb phrase ‘that means that’, and the verb phrase ‘they found out that ... just for this reason.’ Figure 2 displays the comparative frequency in the two samples of various types of verbal cues to the presence of inference.

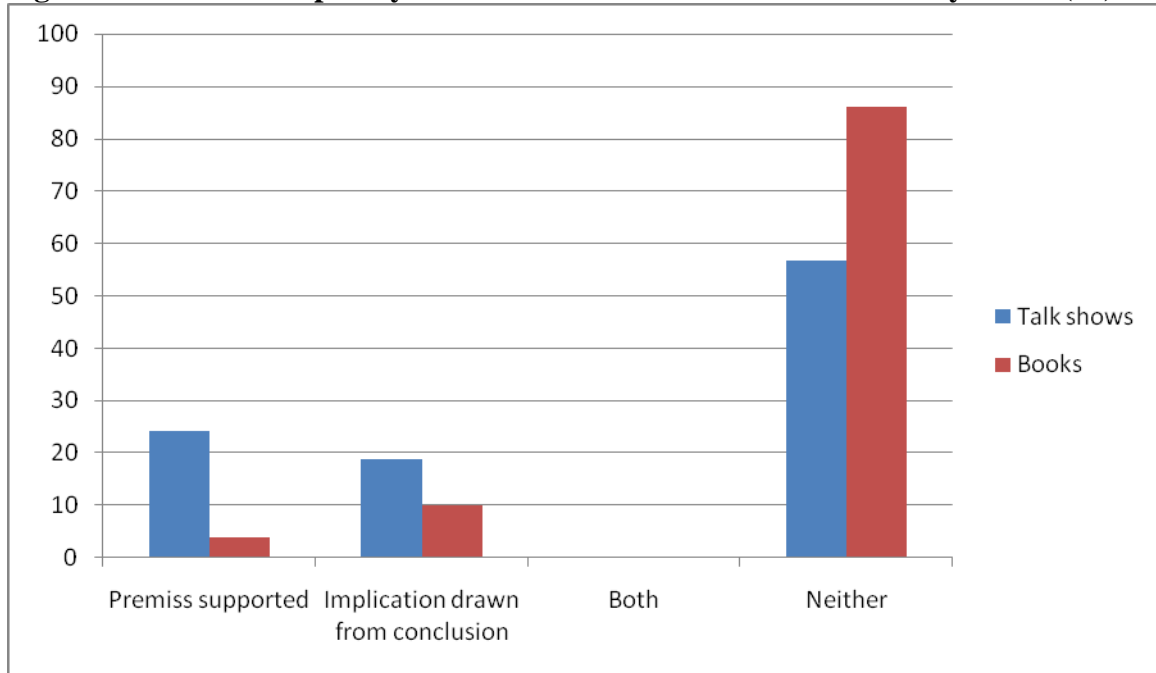
**Figure 2: Verbal cues to inferences in talk shows and scholarly books (%)**



Perhaps somewhat surprisingly, the talk show inferences were more often embedded in a chain of reasoning than the scholarly book inferences. Only 4% of the inferences in the scholarly books had a premise supported by a sub-argument, whereas 24.3% of the talk show inferences had such support. Similarly, only 10% of the inferences in the scholarly books had a corollary drawn from their conclusion, whereas 18.9% of the talk show inferences had a corollary drawn from their conclusion. In these samples at least, off-the-cuff everyday spoken reasoning turned out to be more complex vertically than the reasoning written down at leisure in scholarly books. In the scholarly book sample, the overwhelming majority of the inferences, 86%, were one-off inferences with a conclusion drawn from unsupported premises and not further developed. In the talk show sample, only slightly more than half of the inferences, 56.8%, were so undeveloped. These results are displayed in Figure 3.

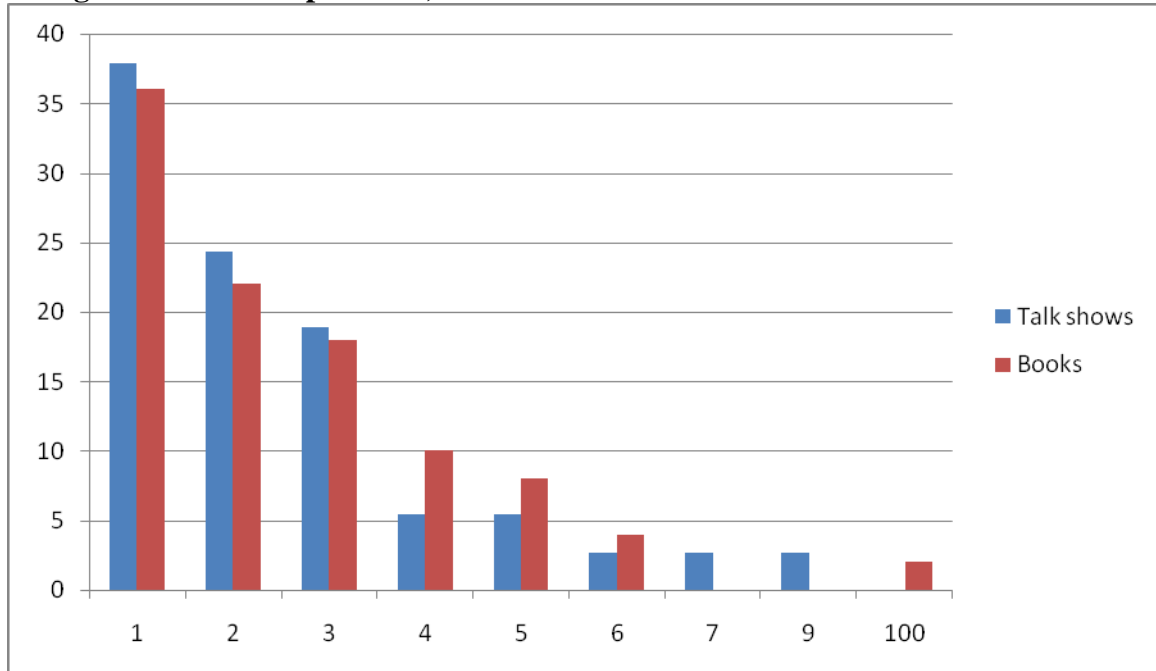
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**Figure 3: Vertical complexity of inferences in talk shows and scholarly books (%)**



The two samples were however very similar in horizontal complexity, the number of premisses offered in direct support of a conclusion. Each had about the same percentage of one-premiss inferences, two-premiss inferences, and three-premiss inferences, as shown in Figure 4. On average, the scholarly book inferences had an average of 4.38 premisses, a figure exaggerated by one inference with 100 premisses; the median (middle-ranking) number of premisses was in fact two. The talk show inferences had an average of 2.51 premisses, but the median number of premisses was also two.

**Figure 4: Horizontal complexity of arguments in talk shows and scholarly books (% with given number of premises)**

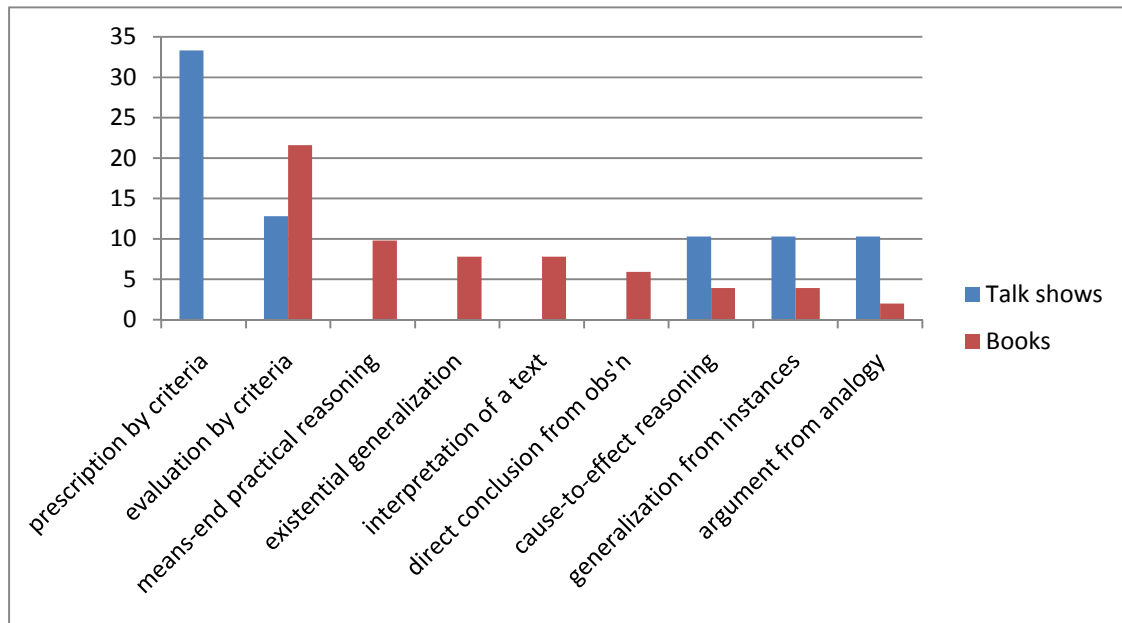


An approach to argument and inference evaluation that is compatible with the covering generalization approach, though more specific, is that of argument schemes (sometimes called reasoning schemes or argumentation schemes) and critical questions. An argument scheme is a pattern of argument, typically not purely formal, which under certain conditions provides support for a conclusion drawn in accordance with it. Examples are means-end reasoning, inference to the best explanation, inductive generalization from instances, reasoning from the results of a randomized trial to a causal conclusion, and so forth. The scholarly literature includes dozens of such argument schemes. Kienpointner (1992a) uses a combinatorial approach to distinguish about 60 argument schemes (Kienpointner 1992b, p. 186). Grennan (1997) likewise uses a combinatorial approach, starting from a typology of eight kinds of claims, to identify several dozen “inductively satisfactory argument patterns” (p. 219), counting as inductively satisfactory an argument whose conclusion has a high probability conditional on the truth of its premises. Walton, Reed and Macagno (2008) identify 96 distinct argumentation schemes. Each scheme, when fully elaborated, comes with a set of “critical questions,” satisfactory answers to which imply that an argument with that scheme justifies its conclusion, subject to its being overridden by further information. Generically, these questions concern the acceptability of the premises of the particular argument, the acceptability of the covering generalization (which is the expression of the scheme as a conditional whose antecedent is the conjunction of the scheme’s premises and whose consequent is the scheme’s conclusion), and the absence of known overriding considerations. Their specific elaboration provides concrete guidance for evaluation of arguments manifesting the scheme in question. For example, critical appraisal of reports of randomized trials works by seeking answers to the critical questions associated with the scheme of reasoning from the results of a randomized trial to a causal conclusion.

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It is an open question whether all inferences and arguments can be assigned to a recognized argument scheme. Combinatorial approaches promise an exhaustive classification, but the fulfillment of the promise depends on the exhaustiveness of the division of each variable into its possible values. Further, it is not clear which argument schemes are commonly exemplified in reasoning and argument, either in scholarly or everyday contexts. For pedagogical purposes, it would be useful to have some idea of which schemes are more common. The present study and its predecessor make a contribution to this question, as well as to the question of whether every inference and argument belongs to a recognized argument scheme. Figure 5 displays the comparative frequency among the scholarly book inferences and the talk show inferences of the argument schemes that were exemplified at least three times in at least one of the samples. In both the present study and the previous one, inferences and arguments were assigned to an argument scheme without any preconceived typology of such schemes.

**Figure 5: Common argument schemes in talk shows and scholarly books (%)**



The most common argument schemes accounted for 62.8% of the 51 argument schemes in the arguments taken from scholarly books, but for 76.9% of the 39 argument schemes in the arguments uttered by callers to talk shows.<sup>3</sup> The talk show speakers were thus far more stereotypical in their patterns of reasoning: more than three-quarters of the sampled arguments and inferences manifested one of just five argument schemes, whereas less than two-thirds of the inferences and arguments taken from scholarly books manifested eight argument schemes. In the talk show sample, a full third of the inferences and arguments manifested a single scheme of argument, an inference from criteria to a prescription, i.e. from what is the case to what should be done. This strong concentration

<sup>3</sup> The number of schemes is greater than the number of pieces of discourse in the sample because some discourses exemplify more than one scheme. In the present study, one argument could not be assigned to a scheme, one argument exemplified two schemes, and a third actually consisted of three arguments to the same conclusion.

on reasoning from facts to desirable actions and policies is perhaps a peculiarity of the talk show format, where callers are often responding to policy questions. In the present sample, the most frequently discussed topics were the war in Iraq, which began during the study period and was the focus of 11 of the 37 arguments and inferences; and the epidemic of sudden acute respiratory syndrome (SARS), which broke out in Toronto during the study period and was the focus of five of the 37 arguments and inferences. Both topics raised many issues about what the government should be doing. Even allowing for distortions caused by the forum from which the present sample was selected, it is a reasonable guess that inferences from what is the case to what should be done occur frequently in everyday discourse, and should therefore occupy the attention of theorists of argument evaluation. In the previous study, it was possible to classify such inferences under the more specific label of means-end reasoning, which can in turn be divided into reasoning from a necessary means to a prescription and reasoning from a sufficient means to a prescription. In the present study, the 13 pieces of reasoning from factual claims to a prescription did not obviously subdivide into such more tractable specific argument schemes. Likewise, the five pieces of reasoning belonging to a related scheme, evaluation by criteria, did not obviously subdivide into tractable specific argument schemes.

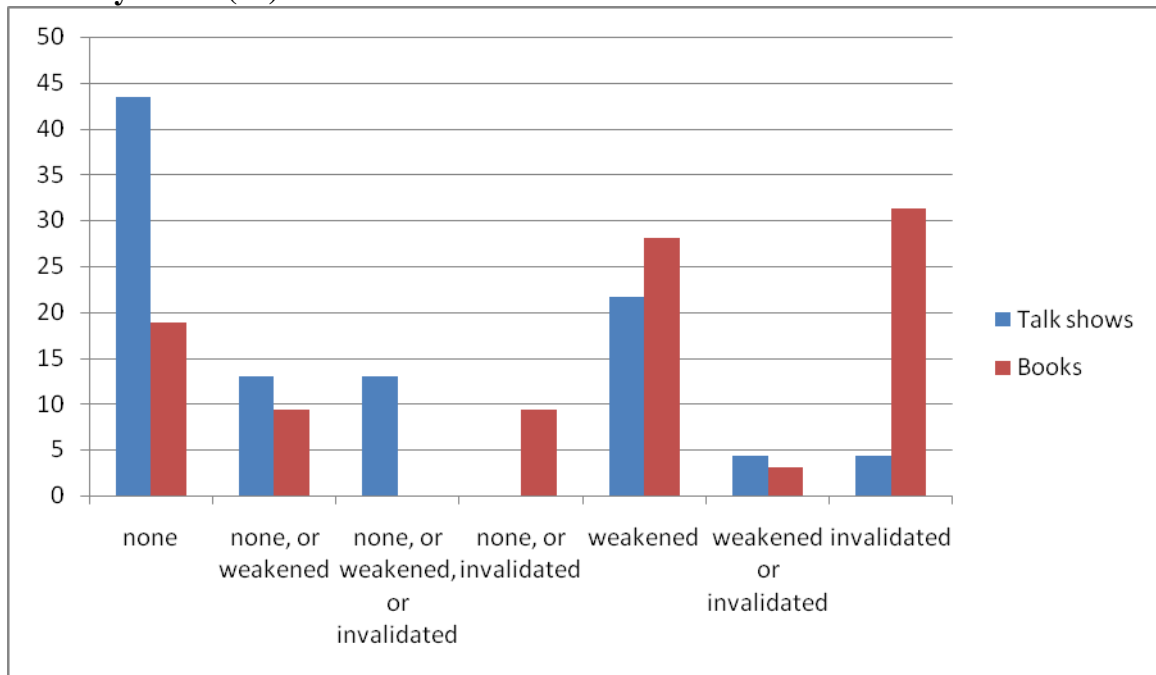
The other three argument schemes occurring at least three times in the present sample are more commonly recognized: cause-to-effect reasoning, generalization from instances, and arguments by analogy.

In the theory of argument analysis it is conventional, following the lead of Beardsley (1950) and Thomas (1977), to distinguish within the class of arguments where more than one premise is offered in direct support of a conclusion those that are “linked” from those that are “convergent.” Thomas defines an argument as linked “when it involves several reasons, each of which is helped by the other(s) to support the conclusion” (1977, p. 36), and as convergent when “each reason apparently supports the conclusion completely separately and independently of the other” (1977, p. 38). Subsequent scholarship has proposed various tests, nicely summarized and critiqued by Douglas Walton (1996, pp. 109-150), for determining whether the support relation in a multi-premise single-inference argument is linked or convergent. One approach is to see what happens to the strength of support when a premise is eliminated from the argument, another to see what happens to it when a premise is negated, i.e. assumed false. There are however serious objections to the whole enterprise of classifying multi-premise single-inference arguments according to the way the premises do or do not work together to support the conclusion. For one thing, as Vorobej (1995) points out, any of the proposed tests may give a different result when applied to one premise than to another, so that the argument would be in one respect linked and in another respect convergent. For another, it is not clear how to classify the structure of the support relation when the reasons as a whole do not in fact support the conclusion, i.e. the argument is invalid. Most significantly, what is the point of determining whether the argument is linked or convergent? From the point of view of evaluation of the argument, which is the ultimate goal, the question is how strong the argument is if it turns out the one of the premises offered in direct support of the conclusion is eliminated (because we have no good reason to accept it) or negated (because we have good reason to reject it). So, rather than asking whether the multi-premise single inferences in the current sample are linked or convergent, I have asked of each premise what would be the effect on the strength of

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support of eliminating it and what would be the effect on the strength of support of negating it. These questions make sense only for multi-premise inferences that are valid. The results for the 23 such inferences in the present sample are displayed in Figures 6 and 7, with a comparison to the results for the 32 such inferences in the previous study. In general, multi-premise reasoning tended to be tighter in the scholarly books than in the talk shows, in the sense that elimination or negation of a premise was more likely to weaken or invalidate an inference if it came from a scholarly book than if it came from a talk show. With elimination of a premise, more than half (59.4%) of the multi-premise valid inferences in the scholarly books were weakened or invalidated but only a quarter (26.0%) of those in the talk shows. Correspondingly, elimination of a premise had no effect on the strength of support in almost half (43.5%) of the multi-premise valid inferences in the talk shows, but in only a fifth (18.8%) of such inferences in the scholarly books. In both samples, there was a sizable proportion of hybrid multi-premise valid inferences, where the effect of eliminating a premise differed from one premise to another; about a fifth (21.9%) of such inferences in books had such hybrid support, and almost a third (30.3%) in the talk shows. The pattern was similar when a premise was negated rather than eliminated.

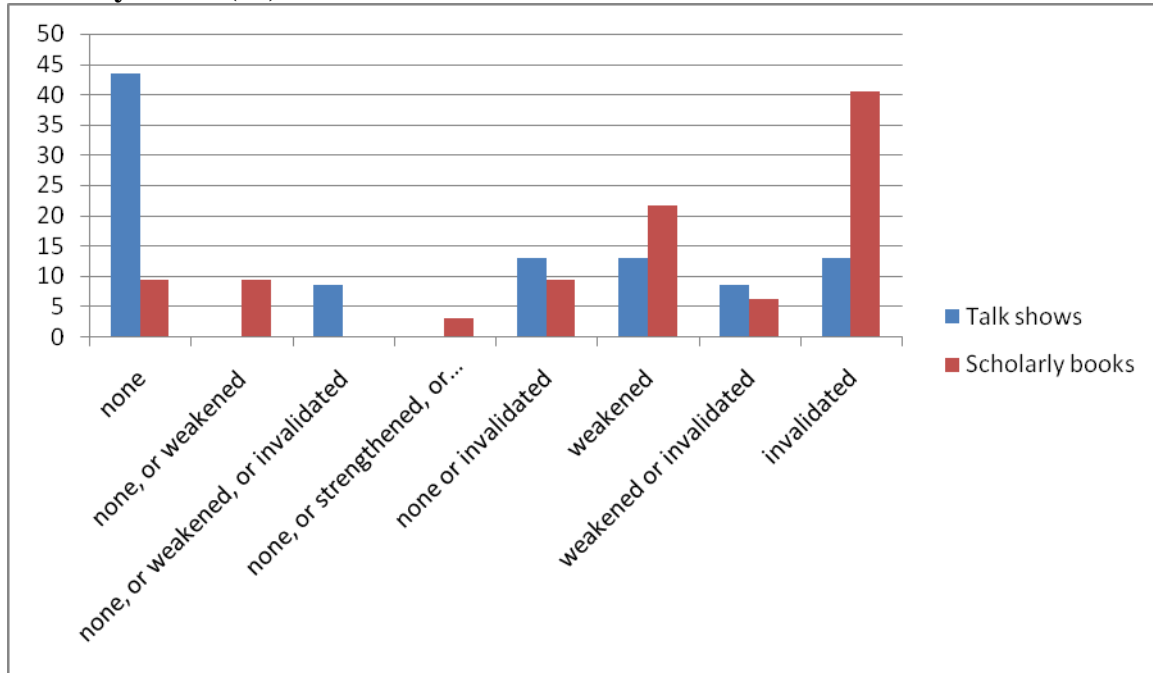
**Figure 6: Effect on inference strength of eliminating a premise in talk shows and scholarly books (%)<sup>4</sup>**



<sup>4</sup> Disjunctive entries indicate different effects from eliminating different premises.



**Figure 8 Effect on inference strength of negating a premise in talk shows and scholarly books (%)<sup>5</sup>**



A final point of comparison concerns the ratio of arguments to inferences in each sample. In the sample of 50 argumentative passages taken from scholarly books, all the inferences were reports of arguments offered by others, arguments that the books’ authors did not endorse. In the sample of 37 argumentative passages transcribed from phone calls to talk shows, in contrast, none of the argumentative passages were reported arguments. Nevertheless, some callers appeared to be merely describing their own reasoning process, without attempting to get listeners (or the host) to buy into their reasoning. Here is an example from a woman who phoned in response to the question whether school boards are “cooking the books” by telling weak students not to take standardized tests:

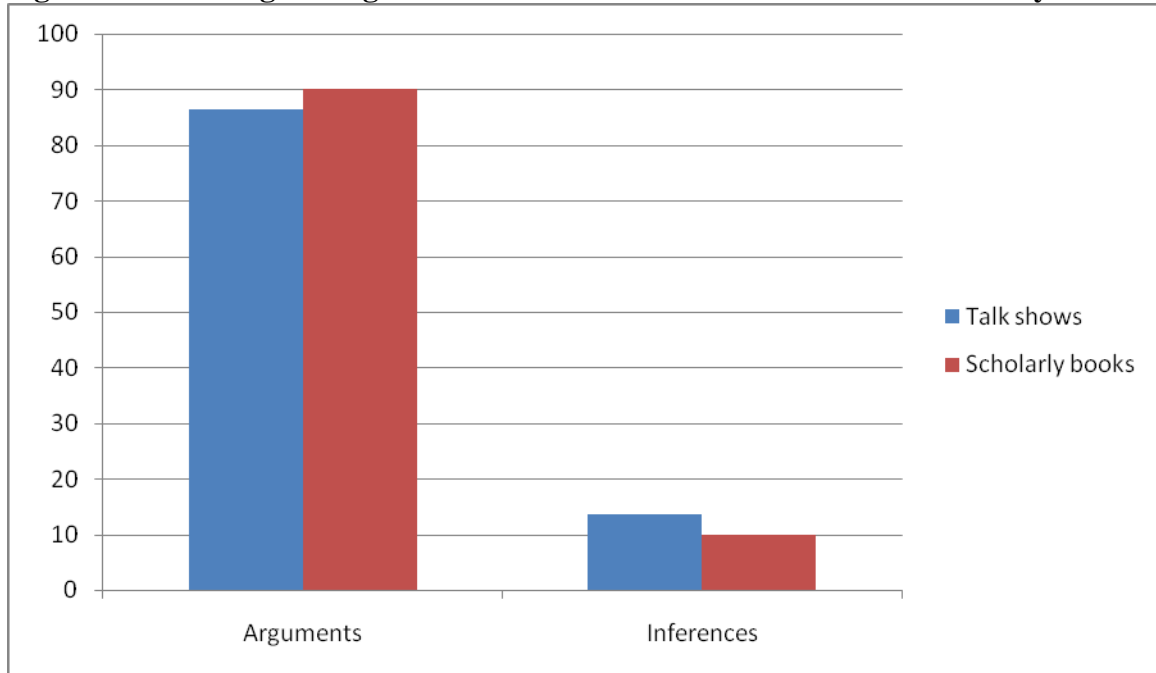
I do believe that they’re cooking the books, in fact they’ve burnt that whole dinner to a crisp! There’s just nothing left. I have elementary school children and one of them had missed a lot of school in grade five, and they wanted him to go on to grade six because of his emotional well-being. This child would have never survived in grade six! So I forced the issue and wrote a letter to the school board and said, ‘No, my son will repeat a year’, and it was the best thing we did for him, now he’s thriving beautifully. So, yeah, I think they are cooking the books, for sure. (April 25, 2003, Larry Silver Show, 900 CHML, Hamilton, about 12:55)

The qualifiers “I do believe that” and “I think” indicate that the caller is advancing her conclusion as one that she herself reached. She gives no sign of wanting to convince her audience on the basis of the reasoning she advances.

Although the reason why some inferences were not arguments differed in the books and the talk shows, the proportion of arguments was about the same, 90% in the books and 86.5% in the talk shows. Figure 8 displays the comparison.

<sup>5</sup> Disjunctive entries indicate different effects from negating different premises.

**Figure 8: Percentage of argument and inferences in talk shows and scholarly books**



#### 4. CONCLUSION

The major general conclusion that can be drawn from this study is that the covering generalization approach to evaluating inferences can be applied successfully to everyday spoken inferences and arguments. Although the 39 inferences found in the talk shows may be untypical in various respects of all the spoken inferences and arguments that human beings have uttered and will utter, the fact that the covering generalization approach could be applied to all 39 inferences makes it very unlikely that there is a large class of spoken inferences and arguments to which the covering generalization approach does not apply.

It is a further question whether the covering generalization approach produces evaluations of inferences that correspond reasonably well to the evaluations produced by sophisticated reasoners, whether they use some alternative systematic approach or rely on untheorized habits of evaluation. The present study has made no attempt at such comparisons. The appendix provides the reader with an opportunity to evaluate each inference in the sample independently and compare the result to the result of applying the covering generalization approach.

It is tempting to make further generalizations about spoken inferences and arguments on the basis of this sample. But the inferences made on talk shows in the Hamilton area in the spring of 2003, mostly by callers, may be unrepresentative of spoken inferences generally, for various reasons and in various ways, many of them unknown. So one can only claim that the results suggest certain generalizations about spoken inferences. These generalizations would need to be tested against other samples of

spoken inferences in order to see whether they hold up. Among the generalizations thus suggested are the following:

1. Both in spoken and in written discourse, people drawing conclusions may use inference indicators to signal that fact about half the time.
2. Both in spoken and in written discourse, the median (middle-ranking) number of reasons that people give in direct support of a conclusion is probably two. In the vast majority of cases, they give either one or two or three reasons in support of their conclusion.
3. Contrary to what one might expect, people may be more likely to use chains of reasoning in spoken discourse than in written discourse.
4. Spoken inferences may be bad more often than written inferences.
5. Contrary to what one might expect, spoken inferences may be less likely to use an implicit premise that must be supplied from the context than are written inferences. Appeal to such “gap-filling” implicit premises may occur about half as often in spoken discourse as it does in written discourse.
6. Most inferences, spoken or written, fall under a recognized argument scheme.
7. The most commonly exemplified patterns of reasoning in spoken discourse seem to be reasoning from facts to a prescription or evaluation, reasoning from causes to effects, generalization from instances and reasoning by analogy.
8. Contrary to what one might expect, formally valid patterns of reasoning may occur with noticeable frequency in spoken discourse, in fact, about as often as reasoning from causes to effects, generalization from instances and reasoning by analogy.
9. Inferences from more than one premise may be loose in spoken discourse more often than in written discourse—loose in the sense that elimination or negation of a premise makes no difference to the strength of support for the conclusion.
10. Most of the time, writers and speakers who draw an inference are trying to convince their readers or hearers to accept their conclusion on the basis of the reasons offered. But sometimes they are just reporting an inference. In written discourse, they do so by reporting another person’s argument. In spoken discourse, they do so by disclosing their own reasoning process without attempting to get their hearers to buy into it.

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[Link to appendix](#)

[Link to commentary](#)

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