

Sampling scholarly arguments: appendix

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The following sample of 50 arguments and inferences was obtained by random sampling methods from the collection of the McMaster University libraries in the year 2000. I would like to acknowledge the careful work of my research assistant, Craig Faucette, in selecting the passages under my direction, and the helpful cooperation of library officials.

1. Fabricius's principal anatomical work was his accurate and detailed description of the valves in the veins. Although they had previously been observed and crudely drawn by other scientists, Fabricius publicly demonstrated them in 1579 in the veins of the limbs and in 1603 published the first accurate description—with detailed illustrations—of these valves in *De Venarum Ostiois (On the Valves of the Veins)*. (Abbott 1983, 45)

Premises:

They [the valves in the veins—DH] had previously been observed and crudely drawn by other scientists.

Fabricius publicly demonstrated them [the valves in the veins—DH] in 1579 in the veins of the limbs.

In 1603 <Fabricius> published the first accurate description—with detailed illustrations—of these valves in *De Venarum Ostiois (On the Valves in the Veins)*.

Conclusion:

Fabricius's principal anatomical work was his accurate and detailed description of the valves in the veins.

Context: The entry in a biographical dictionary of scientists for Hieronymus Fabricius ab Aquapendente (1537-1619), an Italian anatomist and embryologist. This passage occupies most of a paragraph in which the author points out some of Fabricius's chief contributions to anatomy.

Field: biography (encyclopaedic, of scientists)

Analytical comments: The premisses provide definitive support to the claim that Fabricius gave an accurate and detailed description of the valves in the veins; in fact, this part of the conclusion follows formally from the last premiss. The other information in the premisses establishes (non-formally) that Fabricius' description of the valves was an original contribution to anatomy, but the author expects us to infer from his or her silence that Fabricius made no other contributions to anatomy which were equally or more significant.

Inference-licensing covering generalization: If a scientist publicly demonstrates an anatomical feature which other scientists had previously observed but only crudely drawn, and publishes the first accurate description of it with detailed illustrations, then the accurate and detailed description of that feature is that scientist's principal anatomical work.

Evaluation of inference-licensing covering generalization: The generalization is provisionally true, almost as a matter of what "anatomical" means. It is subject to rebuttal in particular cases by evidence of equally or more significant contributions to anatomy by the scientist in question.

2. In establishing the stoichiometric, thermochemical, and kinetic relationships [in a biological process used in wastewater treatment–DH] it must be remembered that these can be greatly influenced by such environmental variables as temperature, pH, light, ionic environment, etc. The environmental engineering literature should be searched for quantitative values of these relationships; however, it is frequently necessary to resort to experimentation, especially for industrial wastes. (Andrews 1972, 6)

Premises:

In establishing the stoichiometric, thermochemical, and kinetic relationships it must be remembered that these can be greatly influenced by such environmental variables as temperature, pH, light, ionic environment, etc.

Conclusion:

The environmental engineering literature should be searched for quantitative values of these relationships.

Context: This passage comes from the introductory section of a lecture delivered at a 1970 workshop on air and water pollution—a lecture on the kinetics of biological processes used in wastewater treatment—such as the activated sludge process, the trickling filter, anaerobic digestion, and the lagoon. In studying any such process, the author asserts, one should first identify the major reactions involved, then determine the stoichiometry and sometimes the thermochemistry, then determine the kinetic relationships. The above passage gives some general advice about how an engineer studying such a process should establish these three types of relationships.

Field: environmental engineering

Analytical comments: This is an example of goal-directed practical reasoning. The student of a biological process used in wastewater treatment has as a goal to determine the stoichiometric, thermochemical and kinetic relationships in the process. The author argues, on the basis of the influence of various environmental variables on these relationships, that such a student should search the environmental engineering literature for quantitative values of these relationships. The subsequent remark that often it is necessary to use experimentation to determine the quantitative values indicates the implicit reason for recommending a literature search where a lot of variables influence a relationship: it is less time-consuming than experimentation. The conclusion follows in virtue of the principle that one should search the relevant scientific literature for quantitative values of relationships between variables when one is trying to understand relationships which are influenced by many variables. This principle in turn is justified by the time saved by doing a literature search rather than determining the relationships oneself by experiment.

Inference-licensing covering generalization: In establishing relationships in a biological process which can be greatly influenced by environmental variables, the environmental engineering literature should be searched for quantitative values of these relationships.

Evaluation of inference-licensing covering generalization: This generalization is universally acceptable within the context for which it is framed, given that known quantitative values of relationships in a biological process influenced by environmental variables can be found in the environmental engineering literature, that one should use the least time-consuming way of establishing such relationships, and that it is much less time-consuming to find known

quantitative values of relationships between variables in a biological process through a search of the relevant scientific literature than to work out those values oneself.

3. One day in the street I met the translator of my articles. He was talking to a man with a full beard, and when I nodded and started to pass on, he stopped me.

“You must want to get chased out of Guatemala,” he said, “by writing such an article as the one about the Monroe Doctrine. We had a lot of trouble with it.”

“What was wrong?” I asked.

The answer came from the man with the beard. “It was too strong,” he said. “You can’t print some of the things you wanted to say. Calling the President of the United States ‘the sluggish-minded James Monroe.’ You will have the American Minister down on you.” (Batson 1931, 181)

Premises:

We had a lot of trouble with it [your article about the Monroe Doctrine in which you called the President of the United States ‘the sluggish-minded James Monroe.’-DH].

Conclusion:

You want to get chased out of Guatemala.

Context: In a memoir of his travels in Central America, the author recounts a chance meeting. The Monroe Doctrine here referred to is the doctrine proclaimed by U.S. President James Monroe in 1823 that the American continents were “henceforth not to be considered as subjects for future colonization by any European powers.” In the 20th century U.S. presidents used the doctrine to justify intervention in smaller American countries, supposedly in order to prevent European countries from intervening in its place. After the conversation described above, Batson discovers that the bearded man is the Chief Justice of the Guatemalan Supreme Court, and that the published translation of his article changed “the sluggish-minded James Monroe” to “the wise James Monroe.”

Field: travel memoirs

Analytical comments: This is an inference from observed data to a hypothesis which would explain them. It is obvious in this case that the mere fact that Batson wrote something which could get him into trouble with the Guatemalan authorities could be explained by other hypotheses than the one suggested here. For example, he might have been unaware that describing as “sluggish-minded” a man who ceased to be U.S. president about 100 years before would be enough to get him thrown out of Guatemala. Or he might have thought that he had friends powerful enough to get him out of difficulties the article might get him into. And so forth. Thus the premiss does not provide enough support to the conclusion.

Inference-licensing covering generalization: Any expatriate Guatemalan resident in the 1920s who writes an article for publication in Guatemala which gets his translator and publisher into a lot of trouble wants to get chased out of Guatemala.

Evaluation of inference-licensing covering generalization: Guatemala’s political system at the time was an authoritarian regime dominated by the United States. An expatriate resident of Guatemala who publicly challenged this domination would therefore be likely to get chased out

of Guatemala. Probably a disparaging public reference to the U.S. President whose doctrine was used to justify the American domination would be regarded as such a public challenge. Thus a person in the position indicated would run the risk of being expelled from Guatemala. But further information is needed to justify the inference that such a person wants to be chased out of Guatemala.

4. We propose to apply, in this last chapter, Hilbert's method to the problem of minimizing the integral

with fixed end-points, under the following assumptions, where \mathfrak{R} denotes, as before, a region of the x, y -plane, and \mathfrak{R}_0 a finite closed region contained in the interior of \mathfrak{R} :

A) The function $F(x, y, kx', ky')$ is of class C'' and satisfies the *homogeneity condition*

$$F(x, y, kx', ky') = kF(x, y, x', y'), \quad k > 0$$

throughout the domain:

\mathfrak{S} : (x, y) in \mathfrak{R} , $x'^2 + y'^2 \neq 0$.

B) The function $F(x, y, \cos \gamma, \sin \gamma)$ is *positive* throughout the domain

\mathfrak{S}_0 : (x, y) in \mathfrak{R}_0 , $0 \leq \gamma \leq 2\pi$.

C) The function $F_1(x, y, \cos \gamma, \sin \gamma)$ is *positive* throughout the domain \mathfrak{S}_0 .

D) The region \mathfrak{R}_0 is *convex* (i.e., the straight line joining any two points of \mathfrak{R}_0 lies entirely in the region \mathfrak{R}_0) and contains the two given points which we denote with HILBERT by A^0 and A^1

a) *Hilbert-Osgood's definition of the generalized integral*: We shall use the following notation: P' and P'' being any two points of the region \mathfrak{R}_0 , we denote by $\mathfrak{M}(P'P'')$ the totality of all ordinary curves which can be drawn in the region \mathfrak{R}_0 from P' to P'' , and by $i(P'P'')$ the lower limit of the values which the integral

$$J = \int F(x, y, x', y') dt$$

takes along the various curves of $\mathfrak{M}(P'P'')$.

This lower limit is always positive. For, according to A) and B), the function $F(x, y, \cos \gamma, \sin \gamma)$ has a positive minimum value m in the closed domain \mathfrak{S}_0 . Hence, if \mathfrak{C} be any curve of $\mathfrak{M}(P'P'')$, we obtain, by taking the arc as independent variable on the curve \mathfrak{C} ,

$$0 < m |P'P''| \leq ml \leq J_{\mathfrak{C}}(P'P''), \quad (1)$$

where l denotes the length of the curve \mathfrak{C} and $|P'P''|$ the distance between the two points P', P'' . Hence it follows that

$$0 < m |P'P''| \leq ml \leq i(P'P''). \quad (2)$$

(Bolza 1931 [1904], 246-7, 248)

Premiss: The function $F(x, y, \cos \gamma, \sin \gamma)$ has a positive minimum value m in the closed domain.

Conclusion: If \mathfrak{C} be any curve of (P', P'') , we obtain, by taking the arc as independent variable on the curve \mathfrak{C} ,

$$0 < m | P' P'' | \leq ml \leq J_{\mathfrak{C}}(P' P''), \quad (1)$$

where l denotes the length of the curve \mathfrak{C} and $| P' P'' |$ the distance between the two points P', P'' .

Context: In the final chapter of a book on the “calculus of variations” which incorporates unpublished lectures of the 19th century German mathematician Weierstrass, the author applies the method of the German mathematician David Hilbert to the problem of minimizing a certain integral. The passages above are part of the preliminaries to this application.

Field: mathematics (calculus)

Analytical comments: This is a typically compressed example of mathematical reasoning, in which three inequalities are derived from one substantive assumption B). The first (proper) inequality follows from assumption B in virtue of the mathematical fact that 0 is less than any positive number. The second (improper) inequality follows from the abbreviations given for the symbols in virtue of the mathematical facts that the distance between two points is less than or equal to the length of any curve drawn between them and that the product of two positive number is less than or equal than the product of one of them and another number less than or equal to the other. The third (improper) inequality follows from the definition of an integral along a specified interval of a curve. Thus there are three inferences; we identify the covering generalization only for the first one.

Inference-licensing covering generalization: For any number x and any distinct points y and z , if x is positive, then zero is less than the product of x and the distance between y and z . ($0 < x | yz |$)

Evaluation of inference-licensing covering generalization: The covering generalization is an arithmetical truth, deducible from the fact that the distance between two distinct points is greater than zero and that the product of two positive numbers is a positive number.

5. We wished to probe further, however, to discover some mechanism which explains why technological change occurs in a particular way or at a particular rate. One step toward an answer to this question was outlined in our discussion of induced technological change (of the disembodied type). In this analysis the rate and direction of technological change become endogenous, being the consequences of some cost-minimization decision. The explanation falls far short of being complete, however, since we still lack any representation of the way in which the economic system generates opportunities for technological change and how expenditure on research might enlarge these opportunities. (Burmeister & Dobell 1970, 97)

Premisses:

We still lack [in the endogenous model of technological change–DH] any representation of the way in which the economic system generates opportunities for technological change and how expenditure on research might enlarge these opportunities.

Conclusion:

The explanation <of induced technological change (of the disembodied type)> falls far short of being complete.

Context: In this text on mathematical theories of economic growth, the authors are summarizing a chapter in which they review how technological change can be introduced into a simple model of economic growth in one sector of an economy. The paragraph above is the last part of a summary of a model of “disembodied” technological change which assume that changing conditions or changing organization result in an increase in the output which can be obtained from given inputs.

Field: economics (theoretical)

Analytical comments: The authors assume that their readers realize that the rate and direction of technological change in a sector of an economy are due not only to decisions within firms, but also to the generation by the economic system of opportunities for technological change, which in turn are affected by spending on research. Given this background knowledge, the conclusion follows definitely, in virtue of the principle that a complete explanation of an economic phenomenon must represent all the factors known to influence it.

Inference-licensing covering generalization: If a model of a kind of induced change in an economic system fails to represent how the economic system generates opportunities for this kind of change and how a certain type of expenditure might enlarge these opportunities, then the model is incomplete.

Evaluation of inference-licensing covering generalization: The generalization is an obvious truth. A model of what causes a certain kind of change in a system must represent all significant causal factors if it is to be complete.

(Butash & Davisson 1991, 47-48)

Premiss: ... the kl th element of R_M is given by

Conclusion: , where A_M is the obvious, positive definite matrix.

Context: This passage comes from a 68-page contribution to an advanced school on adaptive prediction methods held at the International Centre for Mechanical Sciences in Udine, Italy in July 1990. The authors are concerned with “adaptive linear predictors”, mathematical models used to predict the characteristics of a sample on the basis of M immediately preceding observations, given a learning period of $N + M$ observations. They extend an existing theory on how such predictors perform and on criteria for selecting the M observations. Having just derived a formula for the mean square prediction error induced by the M th order linear predictor in a certain type of case, they begin a series of arguments to show that, contrary to initial impression, this theorem substantiates earlier findings.

Field: “mechanical sciences”

Analytical comments: The conclusion of this argument is likely to follow in virtue of the meaning of A_M as an abbreviation of a certain matrix. Presumably the intended readers of this publication could use their mathematical background and subject-matter knowledge to work out what this “obvious, positive definite matrix” is. Without this background, other readers are at a loss.

Inference-licensing covering generalization: If the kl th element of a matrix is the product of a constant and a value dependent on k and l , then the matrix is identical with the product of that constant and a matrix whose kl th element is the same value dependent on k and l .

Evaluation of inference-licensing covering generalization: This seems to be true as a matter of notation.

7. An examination of the following summary tables reveals a steady increase in both revenue and expenditure in most provinces during the years 1949 to 1953.

Net General Revenue by Provinces
Fiscal years ended nearest December 31
(Millions of dollars)

| | 1949 | 1950 | 1951 | 1952 ¹ | 1953 ¹ |
|----------------------------|------------|------------|--------------|-------------------|-------------------|
| Newfoundland | 18 | 21 | 25 | 31 | 31 |
| Prince Edward Island | 5 | 5 | 6 | 7 | 8 |
| Nova Scotia | 34 | 36 | 39 | 45 | 48 |
| New Brunswick | 30 | 32 | 41 | 46 | 48 |
| Quebec | 207 | 239 | 277 | 282 | 297 |
| Ontario | 235 | 266 | 304 | 340 | 362 |
| Manitoba | 38 | 41 | 46 | 54 | 56 |
| Saskatchewan | 61 | 67 | 75 | 89 | 97 |
| Alberta | 89 | 105 | 106 | 142 | 179 |
| British Columbia | 124 | 139 | 157 | 185 | 187 |
| Yukon | .. | 1 | 1 | .. | 1 |
| Total | 841 | 952 | 1,077 | 1,221 | 1,314 |

1. Preliminary.

Net General Expenditure by Provinces
Fiscal years ended nearest December 31
(Millions of dollars)

| | 1949 | 1950 | 1951 | 1952 ¹ | 1953 ¹ |
|---|------------|------------|--------------|-------------------|-------------------|
| Newfoundland | 26 | 27 | 30 | 29 | 34 |
| Prince Edward Island | 6 | 7 | 8 | 7 | 7 |
| Nova Scotia | 51 | 52 | 49 | 47 | 53 |
| New Brunswick | 37 | 41 | 40 | 45 | 49 |
| Quebec | 193 | 224 | 261 | 311 | 310 |
| Ontario | 261 | 279 | 336 | 391 | 443 |
| Manitoba | 35 | 35 | 43 | 39 | 47 |
| Saskatchewan | 58 | 62 | 72 | 85 | 86 |
| Alberta | 58 | 73 | 82 | 102 | 126 |
| British Columbia | 151 | 141 | 152 | 177 | 170 |
| Yukon | .. | 1 | 1 | .. | 1 |
| Total (exclusive of debt retirement) | 876 | 942 | 1,074 | 1,233 | 1,326 |

1. Preliminary.

(Dominion Bureau of Statistics 1954, 4, 6)

Premises: ... the following summary tables [showing net general revenue by source and by Canadian provinces, and net general expenditure by function and by Canadian provinces, for the fiscal years 1949 through 1953 ending nearest December 31–DH].

Conclusion: <There was> a steady increase in both revenue and expenditure <by governments> in most [Canadian] provinces during the years 1949 to 1953.

Context: This passage comes from a preliminary analysis of the revenue and expenditure of provincial governments in 1953 for fiscal years ended March 31, 1954. Reports of revenue and expenditure in the previous five years are included for comparative purposes.

Field: descriptive statistics (government revenue and expenditure)

Analytical comments: This is a qualitative summary of a mass of statistical data. The detailed quantitative information supports the qualitative conclusion. For example, the first two tables show an increase in net general revenue of all provinces combined in each subsequent year (ranging from 7.6% to 13.4%), as well as an increase in net general expenditure of all provinces combined (ranging from 7.5% to 14.8%) in each subsequent year. The last two tables show an increase in net general revenue in each province in each subsequent year (except for Prince Edward Island in 1950), and an increase in net general expenditure in each province in each subsequent year (except for Newfoundland in 1952, Prince Edward Island in 1952 and 1953, Nova Scotia in 1951 and 1952, New Brunswick in 1951, Manitoba in 1950 and 1952, and British Columbia in 1950). Thus it is a fair qualitative description of the data that it shows a steady increase in both revenue and expenditure in most provinces during the years in question. A more revealing description would note that, while revenues increased steadily in each province during these years, expenditures showed more fluctuation within a pattern of general increase.

Inference-licensing covering generalization: If over a five-year period 10 political jurisdictions show a year-to-year increase each year in net general revenue in all but one of the 10 jurisdictions, and a year-to-year increase each year in net general expenditure in 3 of the 10 jurisdictions, then there is a steady increase in both revenue and expenditure in most of those jurisdictions during those years.

Evaluation of inference-licensing covering generalization: The generalization is questionable, in view of the number of jurisdictions (7 of the 10) in which net general expenditures did not increase every year. A more accurate qualitative description of the data would report a steady increase in revenue in every province and a general upward trend in expenditure over the five years.

8. Starting with the studies undertaken under the auspices of the Swedish Low-Income Committee, Scandinavian studies of welfare have increasingly focused on the concept of the *level-of-living*. A given population's level-of-living can be seen as its distribution on a number of measures of the quality of life. In the original Swedish study, nine components of the level-of-living were measured: health, nutrition, housing, family origins and family relations, education, work and work *milieu*, economic resources, political resources and leisure and leisure time pursuits... In subsequent studies covering each of the Scandinavian countries and Finland, there have been slight variations in the components covered, but the general objective has been similar: to present as full a picture as possible

of the extent and distribution of welfare in the widest sense. The concept of equality is an inherent aspect of this research endeavour since the provision of evidence regarding the *level* of living of different sub-groups of the population involves an explicit measure of the distribution of the population in respect of each component. (Castles 1978, 79)

Premises:

The provision of evidence regarding the *level* of living of different sub-groups of the population involves an explicit measure of the distribution of the population in respect of each component.

Conclusion:

The concept of equality is an inherent aspect of this research endeavour [measuring the level of living of populations–DH].

Context: In this comparative study of the achievements of Scandinavian social democracy, Castles devotes a chapter to equality and welfare in capitalist society. This passage comes near the beginning of a section of that chapter on dimensions of equality and welfare in Scandinavia. The author claims that the discussion of welfare in Scandinavian countries in the 1970s has telescoped the distinct concepts of welfare and equality. He claims that it has done so, not by avoiding consideration of equality, but by broadening the concept of welfare to include egalitarian goals. The above passage is offered in support of this claim.

Field: political science (comparative politics)

Analytical comments: This conclusion follows definitely from the premiss offered in view of the conceptual point that equality (in the sense in which it is a social/political ideal for social democratic political parties) is a property of the distribution of valued socially distributable goods among sub-groups of a population.

Inference-licensing covering generalization: If the provision of evidence regarding the value of a certain variable in different subgroups of a population involves an explicit measure of the distribution of the population in respect of each component of that variable, the concept of equality is an inherent aspect of research measuring that variable in various populations.

Evaluation of inference-licensing covering generalization: The generalization is true, as long as the value of the variable increases with increased equality of distribution of its components among the subgroups of a given population. The empirical research described by Castles seems to assume such a positive correlation between level of living and equality of distribution of its components among population subgroups.

9. Pakistan began its political career as an independent State in 1947 with the British Parliamentary system under a Federal Constitution. There was little doubt in Pakistan as in India, Ceylon, Burma and other former British dependencies in Asia that after independence the parliamentary system would be continued. It was the only system of which the politically conscious minority had first-hand experience. In particular, the lawyers who were always prominent in the nationalist movements had studied and come to respect its main principles. Whatever its apparent defects, it seemed to have no real rivals. As a matter of fact, some forms of rudimentary parliamentary institutions had been in existence in the Indian sub-continent since 1919, or more precisely the genesis of the

Legislative Councils could be traced <that> far back. In recent months, when president Ayub Khan challenged the suitability of the parliamentary system for Pakistan it was contended in certain quarters, particularly by the politicians that the country had been accustomed to this form of Government and that it had a long history behind it. (Choudhury 1963, 1)

Premises:

It [the British Parliamentary system–DH] was the only system of which the politically conscious minority had first-hand experience.

The lawyers who were always prominent in the nationalist movements had studied and come to respect its [the British Parliamentary system’s–DH] main principles.

Whatever its apparent defects, it [the British Parliamentary system–DH] seemed to have no real rivals.

Some forms of rudimentary parliamentary institutions had been in existence in the Indian sub-continent since 1919, or more precisely the genesis of the Legislative Councils could be traced <that> far back.

In recent months, when president Ayub Khan challenged the suitability of the parliamentary system for Pakistan it was contended in certain quarters, particularly by the politicians that the country had been accustomed to this [British Parliamentary–DH] form of Government and that it had a long history behind it.

Conclusion:

There was little doubt in Pakistan that after independence the [British–DH] parliamentary system would be continued.

Context: The author begins his book on democracy in Pakistan with a chapter on the growth of parliamentary institutions. This paragraph begins the chapter.

Field: political science (constitutional history)

Analytical comments: The conclusion receives strong evidential support from the premisses, in virtue of the principle that in general there will be little doubt in a colony approaching independence that its system of government while a colony will continue if it is the only system of which the politically conscious minority has had first-hand experience, if those prominent in the nationalist movement have studied and come to respect its principles, if it seems to have no real rivals, if some institutions of this system have been in effect for almost three decades, and if a challenge to its suitability is met by the response that the country had long been accustomed to this system of government and it had a long history behind it. The premisses are separately relevant but cumulative in their support, a status intermediate between that of independent premisses and tightly linked premisses.

Inference-licensing covering generalization: There will be little doubt in a colony approaching independence that its system of government while a colony will continue if it is the only system of which the politically conscious minority has had first-hand experience, if those prominent in the nationalist movement have studied and come to respect its principles, if it seems to have no real rivals, if some institutions of this system have been in effect for almost three decades, and if a challenge to its suitability is met by the response that the country had long been accustomed to this system of government and it had a long history behind it.

Evaluation of inference-licensing covering generalization: This is a highly plausible generalization. The premisses of the argument are separately relevant but cumulative in their support. One could however imagine further evidence compatible with the premisses which would overturn the conclusion, e.g. the existence of a faction in the military which believed in bringing “order” to the political system through a military coup.

10. As has been mentioned earlier, early detection of disabilities is not only desirable but does not call for any high level of expertise. Therefore, the training of other functionaries who work with the women, children and the families should also include some skills employed in detection of disabilities and referral of disabled children. These are balwadi teachers, school teachers, *gram sevikas*, para medical staff including community health guides, adult education instructors etc. (Chowdhry 1985, 127)

Premiss:

Early detection of disabilities is not only desirable but does not call for any high level of expertise.

Conclusion:

The training of other functionaries who work with the women, children and the families [other than such trained functionaries as Balsevikas, Anganwadi workers and supervisory personnel concerned with ICDS (Integrated Child Development Services)–DH] should also include some skills employed in detection of disabilities and referral of disabled children.

Context: In a comprehensive survey of the social welfare system in India, the author devotes a chapter to the prevention and detection of disabilities. In a section devoted to training of workers to deal with disabilities, he points out that health agencies alone cannot prevent, detect and manage disabilities, and describes the training of some other workers in detecting disabilities. Then he advances the above argument for similar training of other functionaries whose role puts them in a position to detect disabilities.

Field: social work (social welfare policy)

Analytical comments: This argument is an example of means-end reasoning in support of a policy recommendation. The desirable end is early detection of disabilities, and the recommended means is training to detect and refer children with disabilities for all functionaries whose job will put them in a position to do so. The author does not make explicit, perhaps because he takes it to be obvious, that such comprehensive training will lower the average age at which disabilities are detected in children. With this assumption added, we have an argument of the form:

End E is desirable.

Means M will contribute significantly to bringing about end E.

Means M can be accomplished rather easily.

Therefore, bring about means M.

This is not a formally valid or semantically valid form of argument, but it establishes a presumption in support of the recommended policy. The presumption could be rebutted in various ways—e.g. by pointing out that for some types of workers would in practice very rarely be in a position to use this training, or that the existing system already detects disabilities in children

about as early as one could expect, or that the extra training envisaged would take too long or be too demanding to be incorporated into the curriculum, etc. The argument is potentially a strong one, but probably should have been elaborated to make it stronger than it actually is.

Inference-licensing covering generalization: If early detection of disabilities in children is not only desirable but does not call for any high level of expertise, then the training of other functionaries who work with children and their families should also include some skills employed in detection of disabilities and referral of disabled children.

Evaluation of inference-licensing covering generalization: This generalization is presumptively acceptable, subject to rebuttal in particular cases on a variety of grounds which it would be difficult to enumerate exhaustively. Examples of rebutting circumstances are an already good system of early detection of disabilities in children, very low expected detection rates by a certain kind of functionary, difficulty of training some functionaries to detect disabilities and refer disabled children.

11. The statistical tables compiled from these questions [three questions included in the census of Canada on June 1, 1921: Can you read? Can you write? Months at school since September 1, 1920–DH] have been previously issued in separate census bulletins, Bulletin No. 17 dealing with School Attendance and Bulletin No. 18 with Literacy. The statistics have also been included in further elaboration in Volume II of the Census Report. The present report is a descriptive examination and interpretation of these statistics. In view of the importance of education and its results under democratic institutions, it will be agreed that scarcely any subject illumined by the census is worthy of more careful study in its relation to social and economic progress. (Coats 1926, 5)

Premises:

The importance of education.

... its [education's–DH] results under democratic institutions.

Conclusion:

Scarcely any subject illumined by the census [of Canada of June 1, 1921–DH] is worthy of more careful study <than literacy and school attendance> in its relation to social and economic progress.

Context: The “Dominion Statistician” of Canada is writing a preface to an analysis of the 1921 census data on illiteracy and school attendance in Canada.

Field: descriptive statistics (census data, Canada)

Analytical comments: This “argument” is perfunctory in the extreme. The premisses are rather alluded to than stated. The author does not tell his readers in what respects education is important or what results it has under democratic institutions. He says nothing to connect education with literacy and school attendance, perhaps assuming that his readers will take it as obvious that attending school and learning to read and write are necessary components of an adequate education. Nothing is said about the relative importance of the other subjects that might be illumined by the census, or the relative value to society of the information that might be derived from a careful study of those other subjects. The author’s extravagant claim does not follow from

the sketchy grounds he adduces in its support.

Inference-licensing covering generalization: If education and its results under democratic institutions are important in a particular country at a particular time, then scarcely any subject illumined by a census of that country's population at that time is worthy of more careful study than literacy and school attendance in its relation to economic and social progress.

Evaluation of inference-licensing covering generalization: The generalization is highly questionable. Other aspects of a country's life might be equally or more important than education, and other aspects of education and its results which are illumined by the census might be worthy of more careful study in relation to social and economic progress.

12. To justify us before God. 2. *Gal. ult.* If righteousness come by y^e Law, then Christ is dead in vain. Because he [Christ–DH] attained not his end in dying, which was to merit for us remission of sin, & imputation of his righteousness for our justification. (Cooper & Minkema 1993, 133)

Premiss:

2. *Gal. ult.* If righteousness come by y^e Law, then Christ is dead in vain.

Conclusion:

<Christ was wounded and bruised> to justify us before God.

Context: This passage comes from the sermon notebook for 1689-1694 of Samuel Parris, the Puritan minister in Salem Village in Massachusetts who led the movement in 1692 which resulted in the execution of 20 women for witchcraft. The above passage comes from notes for a sermon delivered on April 26, 1691—the last of 13 sermons on a text from 53 *Isaiah* 5: “But he was wounded for our transgressions, he was bruised for our iniquities,” which Christians generally take to be a prophecy about the sufferings of Jesus of Nazareth at his crucifixion. The notes elaborate five respects in which Jesus suffered wounds and bruises for our transgressions and iniquities, in each case supporting the claim with a text from the New Testament.

Field: homiletics (Christian)

Analytical comments: Parris and his parishioners would share the assumption that the Bible is the word of God, to be taken as true, given correct interpretation. Thus they would take as true the statement in the second letter to the Galatians that Christ is dead in vain if righteousness comes by the law. A Christian is expected to recognize that Christ is not dead in vain. Hence it follows (by *modus tollens*) that righteousness does not come by the law. The alternative for a Christian is that righteousness comes by the sufferings and death of Christ. If we assume that *righteousness* means the same as *justification before God*, then the conclusion follows, given the assumptions of Parris and his intended audience.

Inference-licensing covering generalization: If it says in the Bible that something happened in vain if righteousness comes by the law, then this thing happened in order to justify us before God.

Evaluation of inference-licensing covering generalization: This generalization is acceptable if and only if one believes that what the Bible says is true and one assumes that righteousness comes either by the law or through this event.

13. ‘... And about Peter; you’ve got to know. I am not married. I am *not* Mrs. MacNair. I have never *been* married at all. I went to Canada ten years ago and while I was alone there I met Captain MacNair and lived with him. We were never married, but I lived with him a long time as his wife and called myself Mrs. MacNair....’
- ‘Why *didn’t* you get married?’ he interrupted. ‘Was *he* married already?’
- ‘No; and we did intend to really, at some time, but we kept putting it off and putting it off until in the end it did not seem worth while; and a year or two ago we separated, finally.’
- ‘Well then, my lovely scandalous one!’ He laughed and shook her. ‘You are *not* somebody else’s wife, not even a widow, and you can marry whom you like.’ (Coppard 1935, 286-287)

Premises:

I [Polly] have never been married at all.

We [Polly and Captain MacNair–DH] did intend to really [get married–DH], at some time.

We [Polly and Captain MacNair–DH] kept putting it [getting married–DH] off and putting it off until in the end it did not seem worth while.

A year or two ago we [Polly and Captain MacNair–DH] separated, finally.

Conclusion:

You [Polly–DH] are *not* somebody else’s wife, not even a widow.

Context: In this short story, the young man Vicary has fallen in love with, and wants to marry, a woman named Polly, who has returned from Canada with a son named Peter and a story that she was married there to a Captain MacNair. In this dialogue, Polly reveals that she never did marry Captain MacNair, and has never been married at all. Vicary correctly infers that she is not somebody else’s wife, a conclusion which follows necessarily in virtue of the meanings of *wife* and *marry*. Vicary’s further conclusion that Polly can marry whom she likes turns out to be a little hasty.

Field: fiction (short story)

Analytical comments: This is a rare example of a conclusion which follows necessarily (though not formally) from the stated premisses, in virtue of the necessary truth that a woman who has never been married at all is not somebody else’s wife and not even a widow.

Inference-licensing covering generalization: A woman who has never been married is not somebody else’s wife, not even a widow.

Evaluation of inference-licensing covering generalization: The generalization is necessarily true, in virtue of the meanings of *married*, *wife* and *widow*.

14. It was August 1955, the day of Eisenhower’s return from the Geneva summit meeting, a chill, rainy afternoon at Washington National Airport as the Vice-President and leading officials gathered to welcome the President home. Many carried umbrellas, but what gave the scene a bizarre aspect was that none of the umbrellas was raised. The dignitaries huddled in the open, wet and bedraggled, because the Vice-President had given the

order—no umbrellas!

In Nixon's mind, this order was necessary for propaganda reasons. At that moment it was still not clear whether Geneva had been a triumph or a setback for the West; and for lack of a better estimate of the situation, there were uncomfortable reminders of Neville Chamberlain and Munich. The umbrella had been Chamberlain's trademark and the emblem of his appeasement policy. Nixon wanted no such untoward symbol. (Costello 1960, 266)

Premises:

At that moment it was still not clear whether Geneva had been a triumph or a setback for the West.

There were uncomfortable reminders of Neville Chamberlain and Munich.

The umbrella had been Chamberlain's trademark and the emblem of his appeasement policy.

Conclusion:

This order [for the welcoming officials not to raise their umbrellas upon Eisenhower's return from Geneva—DH] was necessary.

Context: In this 1960 biography of Richard Nixon, the author is illustrating his point that Nixon's activities as a political operator were a mixture of superstition and gimmickry.

Field: biography (political)

Analytical comments: This is an example of reported reasoning, by Nixon. His conclusion follows if it is assumed that it was necessary to avoid creating an appearance that Eisenhower had been responsible for a Munich-style appeasement at the Geneva summit and that welcoming officials with raised umbrellas could contribute to such an appearance. The latter assumption is presumably an example of the superstition the author finds in Nixon's thinking.

Inference-licensing covering generalization: If something is the emblem of an appeasement policy to which a recent diplomatic initiative may be assimilated, then one must make sure not to associate that emblem with that initiative.

Evaluation of inference-licensing covering generalization: There is perhaps more sense to Nixon's reasoning than the author gives him credit for. Even in those early days of the television age, visual images had a powerful effect on the public imagination. It could easily have been a public relations blunder to have created a scene of officials welcoming Eisenhower on his return with just the same visual montage as British officials who welcomed Chamberlain on his return from Munich.

15.

Figure 29. *Perpetuum mobile?* The pivoted rod is an optical fibre with a ball, each of which contains one atom, on each end. (a) If the left-hand atom is excited it weighs more, and so the rod begins to tip. In principle, energy can be extracted from its motion. (b) Eventually the rod will come to rest vertically with the excited (heavier) atom at the bottom. Thereafter the atom may de-excite and emit a photon, which climbs up the fibre to excite the atom in the top sphere. This leads to an overbalance, which causes the rod to start rotating again, enabling more energy to be extracted. If the effects of gravity on time are overlooked, this device seemingly violates the laws of thermodynamics by providing an unlimited source of free energy.

Careful analysis shows that there is a hidden assumption involved in the operation of the device [an (imaginary) stiff optical fibre rotating on a pivot, which supposedly will rotate without end once an atom on one end is excited–DH]. This assumption is that no change takes place in the excited atom as it swings down from the higher location to the lower. But this is not correct. We have forgotten one of the effects of gravity. As explained in Chapter 2, gravity slows time. The excitation of an atom is rather like a vibration; thus, if time is slowed, so is the frequency of vibration. This implies that the energy of excitation is reduced somewhat, and it is precisely this energy loss that is being syphoned off to run the machine. When the photon climbs up the optical fibre, therefore, it will arrive at the top with less energy than before, and will either fail to excite the atom there, or produce only a lower level of excitation. After a few cycles, the excitation energy will be negligible and the device will come to a halt. The second law of thermodynamics triumphs again. (Davies 1984, 225-227)

Premises:

Gravity slows time.

The excitation of an atom is rather like a vibration.

If <the> time <of a vibration> is slowed, so is the frequency of vibration.

Conclusion:

The energy of excitation [of the atom in the device–DH] is reduced somewhat.

Context: The author is describing the search for a grand unified theory of nature, a “superforce” that unites the four basic forces recognized in contemporary physics: gravity, electromagnetism, the weak force and the strong force. The above passage comes from a section of the final chapter entitled “The harmony of nature,” which points out the unexpected harmony and coherence of nature which physicists have discovered, exemplified by the way in which the second law of thermodynamics (that in a complete physical system entropy, or the amount of energy unavailable for work, never decreases) governs all aspects of the physical world. The present argument shows that an imaginary “perpetual motion” machine which would violate the second law of thermodynamics is impossible because of an effect of gravity, thus indicating the linkage between gravity and thermodynamics.

Field: physics

Analytical comments: The word “thus” in the text is misleading. It suggests a conclusion drawn from what immediately precedes it, but in fact it is evident in itself that, if time slows, the frequency of a vibration slows; further, the fact that the excitation of an atom is like a vibration provides no support to this claim. Nor is the argument very well stated. For the argument to work, the excitation of an atom must be not merely like a vibration, but must be a kind of vibration, with its energy being the frequency of the vibration, or proportional to its frequency. Thus, as stated, the conclusion of this argument does not follow from its premisses, since it might be that the excitation of an atom is unlike the frequency of a vibration with respect to how it changes as time slows down. As stated, the argument is a weak argument from analogy. With careful restatement, the conclusion follows in virtue of the fact that the excited atom is subject to gravity as it swings down from the higher position to the lower one.

Inference-licensing covering generalization: If gravity slows time and the slowing of time slows the frequency of vibration and the excitation of something under the influence of gravity is rather like a vibration, then the energy of excitation of this thing will be reduced somewhat.

Evaluation of inference-licensing covering generalization: As explained in the analytical comments, this generalization is too vaguely stated to be acceptable as it stands. The similarities between an excitation and a vibration need to be specified so that it becomes clear that they are relevant to the loss of energy of excitation.

16. In 1922, the *River Rouge Ry. [Railway–DH] Co. [Company–DH]* made an offer of sale of its St. Remi extension to the *Canadian National Ry. Co.*, successor to the *Canadian Northern Quebec Ry. Co.*, but the offer was refused. It was felt that the extension of the *National Ry.* to St. Remi was not justified at the moment, and, also that the *River Rouge Ry. Co.* had not been ethical in its attempts to secure a subsidy. (Dorman 1938, 524)

Premises:

... the extension of the *National Ry.* to St. Remi was not justified at the moment.

The *River Rouge Ry. Co.* has not been ethical in its attempts to secure a subsidy [for a 2-mile

extension from Canadian China Clay Mines to the village of St. Remi d'Amherst–DH].

Conclusion:

The offer [of the sale of the St. Remi extension by the *River Rouge Railway Company* to the *Canadian National Railway Company*–DH] is refused.

Context: In a statutory history of Canadian railways from 1836 to 1937, the author appends an explanatory note to the title and brief description of a 1922 Quebec statute concerning the River Rouge Railway Company.

Field: history (Canada, railways, statutes)

Analytical comments: This passage reports the reasoning by which the Canadian National Railway Company managers came to refuse the offer of sale of a 2-mile stretch of railway in Quebec. The conclusion of the original reasoning would be a declarative, a kind of speech act in which the mere utterance of a sentence brings something about (cf. proclamations of laws, verdicts of courts, naming rituals for babies and ships). The reasoning is a nice example of “weighing up the pros and cons”–otherwise known as conductive reasoning, good reasons argument, or balance-of-considerations reasoning. In this case, there are two cons, one prudential (the prospective purchaser does not need what is on offer), the other moral (the prospective seller used immoral means to try to get a subsidy for what is on offer). As is usual in pros-and-cons reasoning, these considerations are not decisive, either separately or conjointly. For there might be other unmentioned considerations which would “tip the balance” in the opposite direction. For example, if the price asked were very low and the railway expected to have a use for the extension in a few years, those facts might lead the railway to swallow its moral scruples, on the ground that, however immoral the means used, the 2 miles of rail line were already built. Thus the premisses of the railway management’s reasoning establish a weak presumption for its refusal to accept the offer.

Inference-licensing covering generalization: If company A offers company B something which B does not need and A used immoral means to acquire, then B should refuse to buy it from A.

Evaluation of inference-licensing covering generalization: The generalization is defeasibly acceptable.

17. We now see that the discrepancy between the application of ‘size’ to our sensa and to physical objects in this respect [with respect to whether they are finitely or infinitely divisible–DH] is due to the fact that the former are regarded as existing only when sensed and the latter as existing independently of us. But in that case it becomes impossible to be satisfied with this argument [from the apparent contradiction in ascribing to a realistically construed physical object a determinate size–DH] for a phenomenalist analysis of our propositions about physical objects. For we now see that it only seems absurd to suppose that we are using ‘size’ in a realist sense of physical objects because we presuppose that these objects exist independently of being sensed, i.e. ascribe to them other characteristics in a realist sense. (Ewing 1934, 309-310)

Premiss:

We now see that it only seems absurd to suppose that we are using ‘size’ in a realist sense of

physical objects because we presuppose that these objects exist independently of being sensed, i.e. ascribe to them other characteristics in a realist sense.

Conclusion:

It becomes impossible to be satisfied with this argument [from the apparent contradiction in ascribing to a realistically construed physical object a determinate size–DH] for a phenomenalist analysis of our propositions about physical objects.

Context: In his critical survey of idealism, Ewing is arguing for a realist rather than a phenomenalist understanding of physical objects—i.e. one which treats them as really existing independently of our perceiving them rather than as “logical constructions” out of sense data. The above passage is part of the author’s argument that we do not have to assume that objects existing independently of being sensed have an absolutely determinate size, in the sense of *size* in which “*sensa*” have absolute determinate size.

Field: philosophy (metaphysics)

Analytical comments: Ewing’s argument assumes that any argument for a philosophical position which is based on the absurdity of its rival in one respect is unsatisfactory if the derivation of the absurdity presupposes the truth of the rival position in other respects. This is a dubious assumption, since it is perfectly legitimate to use the various components of a theory in refuting it by *reductio ad absurdum*. So Ewing’s conclusion does not follow. Fortunately for Ewing’s general position, he goes on to give stronger arguments for realism about physical objects.

Inference-licensing covering generalization: A reduction to absurdity of some aspect of a certain philosophical position is unsatisfactory if it presupposes other aspects of that philosophical position.

Evaluation of inference-licensing covering generalization: There seems no reason why this generalization should be true. What is wrong with using various aspects of a philosophical position to show that it implies some absurdity?

18. But anyone who thinks it would be easy to describe a new virtue connected with clasping the hands three times in an hour should just try. I think he will find that he has to cheat, and suppose that in the community concerned the clasping of hands has been given some special significance, or is thought to have some special effect. The difficulty is obviously connected with the fact that without a special background there is no possibility of answering the question ‘What’s the point?’ It is no good saying that there would be a point in doing the action because the action was a morally good action: the question is how it can be given any such description if we cannot first speak about the point. And it is just as crazy to suppose that we can call *anything* the point of doing something without having to say what the point of *that* is. (Foot 1997, 109-110)

Premises:

The question is how it [the clasping of hands three times in an hour–DH] can be given any such description [as a morally good action–DH] if we cannot first speak about the point [of the action].

Conclusion:

It is no good saying that there would be a point in doing the action [of clasping one's hands–DH] because the action was a morally good action.

Context: In this article about moral beliefs, the British moral philosopher Philippa Foot is arguing against the assumption that someone may without logical error base his beliefs about matters of value entirely on premisses which no one else would recognize as giving any evidence at all. She takes as an example someone's suggesting that clasping the hands three times in an hour was in itself (without any special background) a morally good action. Such a person, she argues, would have to claim that it was a good thing to do in one of the ways actions can be morally good, e.g. as fulfilling a duty or exemplifying a virtue; but without any special assumptions clasping the hands three times in an hour falls under none of these categories. She then considers the objection that the action of clasping the hands might exemplify some hitherto unrecognized virtue. The present passage is designed to refute this objection. She goes on to assert that moral virtues must be connected to human good and harm.

Field: philosophy (ethics)

Analytical comments: This is an interesting example of refutation of an argument by pointing out that it begs the question. Foot's imaginary interlocutor proposes that clapping the hands three times in an hour is a morally good action. Foot asserts that without a special background there is no answer to the question, "What's the point of this action?" She imagines her interlocutor saying, "There is a point because it is a morally good action." This reply is question-begging, she asserts, because the question at issue is how the action can be called morally good if we cannot first speak about its point. Foot's argument is valid in virtue of the principle that an argument which begs the question is no good.

Inference-licensing covering generalization: If the question at issue is how something can be A without being B, then it no good saying that it is B because it is A.

Evaluation of inference-licensing covering generalization: The generalization is absolutely correct. An argument which begs the question at issue is no good.

19. In a medal that is attributed to Alessandro Vittoria, inscribed "IOSEPHUS PORTIUS COMES VICENTIE," his face [the face of Iseppo da Porto, the man who gave the commission for the Palazzo da Porto Festa in Vicenza, Italy–DH] does not have a well-defined character, only a certain sense of pride. If the medal is to be dated in the years 1552-53, when Vittoria was in Vicenza working for Iseppo's brother-in-law in Palazzo Thiene, then it would be contemporary with the portrait [of Iseppo Porto with his elder son Adriano, painted about 1553–DH]. But since Iseppo appears in profile in the medal and in full face in the portrait it is difficult to compare them. (Forssman 1973, 14).

Premisses:

Iseppo appears in profile in the medal.

<Iseppo appears> in full face in the portrait.

Conclusion:

It is difficult to compare them [the medal attributed to Alessandro Vittoria and the portrait painted by Paolo Veronese–DH].

II - PAOLO VERONESE, *Portrait of Iseppo da Porto with his son Adriano*. Florence, Uffizi

I - ALESSANDRO VITTORIA (?), *Medal with the portrait of Iseppo da Porto (recto and verso)*

Context: Forssman begins his book on an Italian palace with a chapter on the man who commissioned it. Here he discusses what we can learn of his character from surviving portrayals of him.

Field: art history (architectural history)

Analytical comments: This conclusion follows definitely from the premisses in virtue of the fact that it is difficult to compare a full-face portrait with a portrait in profile. But the conclusion is much more vividly demonstrated by the reproductions of the medal and the portrait which accompany the text. These are a striking example of a compelling visual argument: one has only to look at the two reproductions to see how difficult it is to compare the two portraits. In fact, without external evidence, it would be impossible to tell that they were portraits of the same man at about the same time.

Inference-licensing covering generalization: It is difficult to compare a representation of a person in profile in a medal and a full-face portrait of a person.

Evaluation of inference-licensing covering generalization: The generalization is correct. The reproductions in the text provide striking visual confirmation.

20. Different is often taken to mean inferior by insensitive observers, both Italian and foreign. In much of the recent literature in the social sciences, southern Italy is viewed as an underdeveloped country in comparison with its northern counterpart. The Italian South is unquestionably inferior economically to the North, but economic prosperity is not necessarily a true indicator of the quality of a society's life. While materially

impoverished, the South has produced many of Italy's greatest men of letters and affairs. (To cite only a few of her political thinkers of note, she can claim Vico, Cuoco, Mosca, Croce, and Dorso.) She also remains the land of the wondrous scenic beauties described by Goethe in his *Italienische Reise*, as well as of architectural marvels like the Baroque churches of Apulia. It would be extremely shortsighted to view the South as simply, or even primarily, a place where poverty, illiteracy, poor soil, earthquakes, brigandage, and disease abound. (Germino & Passigli 1968, 21)

Premises:

The Italian South is unquestionably inferior economically to the North.

Economic prosperity is not necessarily a true indicator of the quality of a society's life.

<The South is> materially impoverished.

The South has produced many of Italy's greatest men of letters and affairs.

She [the South–DH] also remains the land of the wondrous scenic beauties described by Goethe in his *Italienische Reise*,

<The South remains the land> of architectural marvels like the Baroque churches of Apulia.

Conclusion:

It would be extremely shortsighted to view the South as simply, or even primarily, a place where poverty, illiteracy, poor soil, earthquakes, brigandage, and disease abound.

Context: In an initial historical chapter of a study of contemporary Italian government and politics, the authors are rebutting what they claim to be a common view, that southern Italy is inferior to northern Italy and is an underdeveloped country in comparison to it.

Field: political science (Italian politics)

Analytical comments: The premises of this argument point to a number of factors relevant to judging the quality of life in the Italian South. Both the first premiss (repeated in the third premiss) and the conclusion concede that in many respects it is inferior to that of the Italian North. The second premiss works to diminish the impact of the first. The fourth through sixth premisses cite various positive features about the quality of life in the South. Although even one of those factors would be enough to establish that the South is not simply a place of poverty, illiteracy, etc., it is a matter of judgement whether they are enough to establish that it is not primarily such a place. In my judgement, the cumulative support given by the cited features is weak. (The parenthetical mention of notable political thinkers from the Italian South I take to illustrative of the point made in the fourth premiss rather than to be providing evidential support for it; the evidence is too narrowly based to be nearly sufficient.)

Inference-licensing covering generalization: If a region of a country is inferior economically and materially impoverished, but has scenic beauty and architectural marvels, and has produced many of the country's greatest men of letters and affairs, then it is not simply, or even primarily, a place where poverty, illiteracy, poor soil, earthquakes, brigandage, and disease abound.

Evaluation of inference-licensing covering generalization: The "simply" is less contestable than the "primarily." Scenic beauty, architectural marvels and some famous native sons seem rather slight counterweights to poverty, illiteracy, poor soil, earthquakes, brigandage, and disease.

21.

Fig. 14-5. Effect of post-trial epinephrine injections on retention. Animals were trained on a one-trial inhibitory (passive) avoidance task with a weak footshock. Retention latencies of control animals that receive only saline are quite low. Retention latencies of animals that received appropriate post-trial epinephrine injections were significantly higher. (a) Immediately after training, animals received epinephrine injections at different doses. The most effective dose was 0.1 mg/kg, which significantly facilitated retention performance ($p < .001$). (b) As the injections of the best dose (0.1 mg/kg) were delayed after training, the effect on memory decreased. Again, immediate post-trial injections facilitated retention ($p < .001$); in the 10-min and 2-hr delay condition, the injections were ineffective ($p < 0.1$ and $p > 0.2$, respectively).

Fig. 14-6. Interaction of motivational intensity and effect of epinephrine on retention. Animals were treated on an inhibitory avoidance task using either a weak (0.7 mA, 0.35 sec) or strong (2 mA, 1 sec) footshock. Immediately after training, epinephrine injections were administered. Under the low footshock conditions, epinephrine facilitated retention ($p > .01$). Under the high footshock condition, the same dose of epinephrine disrupted retention ($p < .01$).

Further, as Fig 14-5 [above–DH] shows, the same dose (0.1 mg/kg) that produced the greatest facilitation of retention when low footshock is used is disruptive when administered after high footshock (Fig. 14-6 [above–DH]). This suggests that the injections of epinephrine have effects that add to the physiological responses initiated by the footshock. The interaction between footshock level and epinephrine injection dose was as predicted by an inverted-U model. (Gold & McGaugh 1975, 369-370)

Premises:

The same dose (0.1 mg/kg) <of epinephrine> that produced the greatest facilitation of retention when low footshock is used is disruptive when administered after high footshock (Fig. 14-6). The interaction between footshock level and epinephrine injection dose was as predicted by an inverted-U model.

Conclusion:

The injections of epinephrine have effects that add to the physiological responses initiated by the footshock.

Context: The authors are describing the results of experiments designed to test the hypothesis that secretion of hormones in the brain influences memory storage processes. They trained rats to lick from a water spout at the end of a long alley, then subjected them to footshocks when they licked from the spout. They measured retention of the memory of the footshock by how long the rat waited the next day before licking from the water spout. To imitate the effect of secretion of hormones in the brain, they injected, soon after the footshock, a hormone which the brain produces. They used saline injections as controls. The first premiss of the above argument summarizes their comparison of the results following a weak footshock and following a strong footshock, with saline injections and with injections of the hormone epinephrine. The accompanying figure with its description displays their methods and results.

Field: psychology (cognitive: memory)

Analytical comments: This is an argument from a mass of observed data to a possible explanation of those data. The inverted-U model proposed by the authors is that the degree to which information will be stored in an animal's memory increases with increasing levels of hormones being secreted, up to a maximum, after which the degree decreases because of disruptive effects. The combination of this model with the additive hypothesis suggested in the author's tentative conclusion would explain the data they report. The authors present this hypothesis only as a possibility because they have not tried systematically to rule out other hypotheses which would explain the same data.

This example is of some interest because the accompanying figures and their captions are integral to understanding the logic of the argument. Figure 14-6 displays the observed data in a way which is much more striking and informative than any verbal description could be.

Inference-licensing covering generalization: If a given dose of a drug produces the greatest positive effect when combined with a low level of another input but is disruptive when combined with a high level of that other input, and the interaction between level of that input and dose of the drug is as predicted by an inverted U-model, then the drug has effects that add to the responses initiated by the other input.

Evaluation of inference-licensing covering generalization: As the authors indicate by their

cautious phrase “suggests that,” this generalization is plausible but not definitively true. Aside from the possibility that the results are mere coincidences, or are peculiar to the individual subjects of these experiments, they could be explained by some sort of interactive effect in which the drug and a high level of the other input nullify each other’s operation. The reader is invited to invent other possible explanations.

22. **1866 Life Assurance Agents’ Journal:** the Official Organ of the National Union of Life Assurance Agents I, 1 (16 Nov. 1885)–ns 134 (1 Feb. 1890); then **Agents’ Journal and Official Gazette:** ns 1 (8 Feb. 1890)–LXIV, 2986 (30 Aug. 1947). Manchester; London; m;w

A 1d. After 1892 its interest is marginal. Until then it contains union branch news, discussion of conditions, grievances. Afterwards becomes increasingly devoted to discussion of insurance schemes, and provision of professional information. (Harrison, Woolven & Duncan 1977, 285)

Premises:

Until then [1892–DH] it [the **Life Assurance Agents’ Journal**, later the **Agents’ Journal and Official Gazette**–DH] contains union branch news, discussion of conditions, grievances. Afterwards [after 1892–DH] <the **Life Assurance Agents’ Journal**, later the **Agents’ Journal and Official Gazette**> becomes increasingly devoted to discussion of insurance schemes, and provision of professional information.

Conclusion:

After 1892 its [the **Life Assurance Agents’ Journal**’s, later the **Agents’ Journal and Official Gazette**’s–DH] interest is marginal.

Context: An entry from an annotated bibliography of British labour periodicals from 1790 to 1970.

Field: history (social, labour, Britain, 19th and 20th centuries)

Analytical comments: The conclusion follows definitely in virtue of the perspective of labour history from which the annotations are written. A periodical increasingly devoted to discussion of insurance schemes and provision of professional information—as opposed to union branch news and discussion of working conditions and grievances—is of marginal interest to labour historians.

Inference-licensing covering generalization: A journal which in its early years contains union branch news, discussion of conditions and grievances is of marginal interest to historians of the labour movement after it becomes increasingly devoted to discussion of insurance schemes and provision of professional information.

Evaluation of inference-licensing covering generalization: Clearly true. Historians of the labour movement are interested in union branch news, discussion of conditions and grievances. They are not, *qua* labour historians, interested in discussion of insurance schemes and provision of professional information about selling life insurance.

23. Executive Order 9981, July 26, 1948 (13 *F. R.*, 4314). Text of both orders is in joint

Army and Air Force Bulletin No. 32 (August 2, 1948). See also Berman, *Politics of Civil Rights*, 116-18; Richard J. Stillman, *Integration of the Negro in the U. S. Armed Forces* (New York: Praeger, 1968), 41-42. The original idea for the committee was Clark Clifford's: "I would suggest . . . a defence establishment board . . . charged with the development of a uniform racial policy in the Services consistent with the President's two goals of equal opportunity and non-discrimination." See original draft of the order and also Clifford to Truman, May 11, 1948, both in Subject File, Segregation in the Armed Forces, Clifford Papers. (Haynes 1973, 295-296)

Premises:

[In a letter to U.S. President Harry Truman on May 11, 1948, Clark Clifford wrote—DH:] "I would suggest . . . a defence establishment board . . . charged with the development of a uniform racial policy in the Services consistent with the President's two goals of equal opportunity and non-discrimination."

Conclusion:

The original idea [for the President's Committee on Equality of Treatment and Opportunity in the Armed Services, established by Executive Order 9981] was Clark Clifford's.

Context: This argument comes from an endnote to a partial quotation of U.S. President Harry Truman's Executive Order 9981, which established a committee to ensure equality of treatment and opportunity for all persons in the United States armed services without regard to race, colour, religion or national origin. The order is quoted in the context of two chapters describing reforms in the armed forces which Truman implemented during his presidency; the rest of the book describes other aspects of Truman's work as commander in chief of the armed forces.

Field: political science (United States)

Analytical comments: This argument supports a claim by a quotation, in this case a claim about who first initiated a certain idea. The quotation does not establish that Clifford originated the idea of the committee that was established, only that Clifford made the suggestion to the President in a letter dated May 11, 1948. It is consistent with the information given that someone else had made the same suggestion earlier, either to the President directly or to Clifford. Thus, the conclusion does not follow. To support it adequately, the author needs to adduce evidence that nobody else suggested the idea before Clifford included it in his letter. Given the way policy suggestions emerge in a complex political system like that of the United States, it is unlikely that such a suggestion would appear first in a letter by a senior government official to the President; it is more likely that Clifford was passing on a suggestion which had been discussed by several people at lower levels. But he may well have been the first one to suggest it to the President.

Inference-licensing covering generalization: The original idea for the President's Committee on Equality of Treatment and Opportunity in the Armed Services, established by Executive Order 9981, came from the author of a letter to U.S. President Harry Truman on May 11, 1948 in which the following sentence appeared: "I would suggest . . . a defence establishment board . . . charged with the development of a uniform racial policy in the Services consistent with the President's two goals of equal opportunity and non-discrimination."

Evaluation of inference-licensing covering generalization: The generalization might be true, but needs support. As indicated above, I am skeptical that an idea of this importance would first

appear in a letter from a cabinet minister to the President. The cabinet minister is more likely to be passing on an idea which his officials had discussed.

24. The most exact translation of the difficult passage is, I apprehend as follows; Prae rore uteri aurorae tibi est juventutis vel prolis tuae. The dew of thy birth is larger, more copious than the dew which proceeds from the womb of the morning. – I cannot acquiesce in the new version; because that disjoins *the womb of the morning*, from *the dew of thy birth*. Whereas, they seem to have a clear affinity, and a close connection. The womb of the morning is, with the utmost pertinency, applied to the conception and production of dews; (Hervey 1769 [1745-1746–DH], 34)

Premises:

That [the new version–DH] disjoins *the womb of the morning*, from *the dew of thy birth*.

They [*the womb of the morning* and *the dew of thy birth*–DH] seem to have a clear affinity, and a close connection.

Conclusion:

I cannot acquiesce in the new version.

Context: In a note to his Christian meditation “Reflections on a flower garden,” the 18th century English clergyman James Hervey is discussing the omnipresence of God. Parenthetically, he takes issue with a new translation of the Biblical passage [Psalm. 110. 3–DH] he is citing.

Field: theology (Christian, meditations)

Analytical comments: Though stated as a description of the author’s personal position, the conclusion in fact amounts to a statement that the translation complained about is erroneous. The premises provide presumptive support to this conclusion, in view of the principle that a translation can be presumed to be erroneous if it separates two concepts which seem in the original to have a clear affinity and close connection. This principle is only presumptively correct; the apparent affinity and connection might be merely apparent (as the authors of the new translation might claim), or there might be overriding reasons for separating in a translation two concepts which are joined in the original—for example, that only in this way can the rest of the meaning be adequately conveyed to the intended audience. Thus, the author’s premises establish a strong presumption that the conclusion is true, but it does not follow definitely from them.

Inference-licensing covering generalization: A translation is unsatisfactory if it disjoins two concepts which seem to have a clear affinity and a close connection in the original.

Evaluation of inference-licensing covering generalization: As indicated above, there is a strong presumption in favour of this principle. Unless there are overriding considerations against it, a translation should preserve affinities and connections of the original.

25. Given his background, character, and personality, Colborne’s manner of founding Upper Canada College is understandable. It meant, however, that he left a two-sided legacy behind him. On the one hand, the boys were well taught, and the loyalty of many of its graduates was life-long. As well, many graduates did what Colborne had expected: they

became leaders in the provincial and national community. On the other hand, because the College was so much his own personal vision and because he did not take advice easily, it contained elements which almost destroyed it. By not asking for a separate endowment, which he might well have got, he embroiled the College in over fifty years of controversy with the university and the grammar schools, both of which firmly believed UCC had taken what rightly belonged to them. By making the College so outrageously large and expensive, and by placing it in York, he put it into debt for years and made it the object of envy and hatred on the part of other schools all over the province. By importing masters from England, he exhibited a disdain for local teachers which was a characteristic of the College for many decades. Finally, by allowing such an overwhelming proportion of the masters to be Anglican clergymen, he tarred the College with a sectarian brush, negating his farsightedness in making the College non-denominational. (Howard 1979, 25-26)

Premises:

By not asking for a separate endowment, which he [Colborne–DH] might well have got, he [Colborne–DH] embroiled <Upper Canada> College in over fifty years of controversy with the university [of Toronto–DH] and the grammar schools, both of which firmly believed UCC [Upper Canada College–DH] had taken what rightly belonged to them.

By making the College [Upper Canada College–DH] so outrageously large and expensive, and by placing it in York, he [Colborne–DH] put it into debt for years and made it the object of envy and hatred on the part of other schools all over the province [Ontario–DH].

By importing masters from England, he [Colborne–DH] exhibited a disdain for local teachers which was a characteristic of the College [Upper Canada College–DH] for many decades.

By allowing such an overwhelming proportion of the masters to be Anglican clergymen, he [Colborne–DH] tarred the College [Upper Canada College–DH] with a sectarian brush, negating his farsightedness in making the College non-denominational.

Conclusion:

Because <Upper Canada> College was so much his [Colborne’s–DH] own personal vision and because he [Colborne–DH] did not take advice easily, it [Upper Canada College–DH] contained elements which almost destroyed it.

Context: In the first chapter of a history of Upper Canada College, a private school in Toronto, Howard is describing the influence of its founder, Sir John Colborne, then governor of Upper Canada (now the province of Ontario), on the College’s character and direction.

Field: history (Ontario)

Analytical comments: The premises assert that Colborne’s decisions in establishing Upper Canada College produced the following five long-term consequences for it:

- 1) fifty years of controversy with the university and the grammar schools of Upper Canada
- 2) years of debt
- 3) envy and hatred on the part of other schools all over the province
- 4) a disdain for local teachers
- 5) tarring of the College with a sectarian brush

Whether these elements almost destroyed the College cannot be determined from the premises. Further, the premises do not conclusively establish that the decisions by Colborne which had

these consequences were due to the College's being his personal vision and to his not taking advice easily; they are all however idiosyncratic personal decisions. The premisses do establish that the decisions of its founder made the early years of Upper Canada College difficult. This argument has the mass of supporting detail characteristic of historian's arguments; the argument assembles into a pattern various effects (as almost destroying the College) and the various decisions which caused them (as examples of making the College his personal vision and not taking advice easily).

Inference-licensing covering generalization: If a private school founder's refusal to ask for an endowment which he might well have got embroils it in over fifty years of controversy with other institutions which believe it has taken what rightly belongs to them, if his making it outrageously large and expensive puts it into debt for many years and makes it an object of envy and hatred on the part of other schools all over its jurisdiction, if his importing masters from elsewhere exhibits a disdain for local teachers which is a characteristic of the school for decades, and if his allowing such an overwhelming proportion of the masters to be clergymen from one denomination negates his far-sightedness in making the school non-denominational by tarring the school with a sectarian brush, then the fact that the school is so much his own personal vision and that he does not take advice easily causes him to build in elements which almost destroy it.

Evaluation of inference-licensing covering generalization: With some appropriate background information, this generalization might be acceptable. One needs to assume that a school founder who let other people's preferences affect the design of the school and who took advice easily would not refuse to ask for an endowment, would not make it outrageously large and expensive, would not import masters from elsewhere to the same extent, and would not allow such an overwhelming proportion of masters in a non-denominational school to be clergymen of one denomination. These are all plausible assumptions. And one needs to assume that the difficulties caused by the effects of these policies of the founder would almost destroy the school. That information perhaps needs to be supplied.

26. Various ministries and departments of government, both at the central and provincial levels, have gradually developed some research capability of their own. Some agencies, such as the Statistics Division of the Ministry of Planning and Development, the Census Commission and the Agricultural Census Commission, produce data for the use of all government agencies on specific topics assigned to them. Besides other uses, this data is also used for planning and policy formulation. The federal government has also established a Public Administration Research Centre located in Islamabad which conducts research and issues documents in public administration, some of them relevant to policy formulation. All ministries and departments have their field organizations which provide information and data about their field operations. This data is occasionally used for policy making and planning. Due to the constraints applicable to other agencies discussed above, the quality and reliability of the data produced by these agencies are not given. (Inayatullah 1991, 68)

Premises:

Some agencies, such as the Statistics Division of the Ministry of Planning and Development, the Census Commission and the Agricultural Census Commission, produce data for the use of all government agencies on specific topics assigned to them. Besides other uses, this data is also used for planning and policy formulation.

The federal government has also established a Public Administration Research Centre located in Islamabad which conducts research and issues documents in public administration, some of them relevant to policy formulation.

All ministries and departments have their field organizations which provide information and data about their field operations. This data is occasionally used for policy making and planning.

Conclusion:

Various ministries and departments of government, both at the central and provincial levels, have gradually developed some research capability of their own.

Context: The above passage comes from a United Nations conference paper on the role of policy research in the formulation and implementation of rural development policies in Pakistan. In this section of the paper, the author is describing the nature and sources of policy research, both in the Ministry of Local Government and Rural Development and in other ministries and agencies.

Field: public administration (rural development)

Analytical comments: This argument is a generalization from instances. The generalization is quite weak; it amounts to saying that some ministries and agencies in Pakistan (other than the Ministry of Local Government and Rural Development) have developed some research capability relevant to formulating rural development policies. The above grouping of the premisses shows that the author cites three different government sources of data, and in each case points out that they are used in, or at least relevant to, policy formulation, presumably with respect to rural development. The conclusion follows quite conclusively from the premisses.

Inference-licensing covering generalization: If some agencies of a government produce data which is used for planning and policy formulation, if the government has established a research centre which conducts research and issues documents some of which are relevant to policy formulation, and if data provided by field organizations of all ministries and departments about their field operations are occasionally used for policy making and planning, then various ministries and departments of government have developed their own research capability relevant to planning and policy formulation.

Evaluation of inference-licensing covering generalization: The generalization is a logical truth, the principle of existential generalization.

27. Janet had the tap on over the sink, so it took some time before Natasha realized that the sounds she heard were not only of water running but also of Janet sobbing. Sobbing was not unusual in the Academy, but Natasha never could get used to it. "Oh gee, Janet," she said. Tears were running down her own cheeks, from the onions she was cutting.

"I don't deserve to be downstairs!" Janet broke out at last.

"But Janet it's only that they needed the *room*."

"Then why me? Why not Shirley? How is she better than I am?" (Jhabvala 1983,

163)

Premises:

<If they only needed the room> “then why me [Janet–DH]?”

“Why not Shirley?”

“How is she [Shirley–DH] better than I [Janet–DH] am?”

Conclusion:

“I [Janet–DH] don’t deserve to be downstairs!”

Context: In this novel, Janet and Natasha are making dinner in the kitchen at “the Academy” (i.e. the Academy of Personal Development, a Hudson Valley retreat where students learn “the Point,” a spiritual practice developed by its founder, Leo Kellerman). Janet is lamenting her recent removal to the attic from the third floor, which is more prestigious. (The reference to “downstairs” in the passage is evidently a mistake by the novelist, who makes clear in the context that Janet has been moved to the attic.) Older residents were shuffled from the second floor to the third floor, or from the third floor to the attic, upon the arrival of new students. New students were given beds on the second floor, which were nicer, in order to make them feel comfortable. The novel’s impersonal narrator remarks, “These arrangements and rearrangements generated considerable feeling.” The incident from which the present passage is taken immediately follows this remark, and is intended to illustrate and support it.

Field: fiction (novel)

Analytical comments: This is a (fictional) example of conversational argument. It is hard to construe whether Janet is objecting to Natasha’s claim that Janet was moved only because they needed the room, or supporting her own claim that she does not deserve to be moved. The questions which function as premisses are in fact rhetorical; they amount respectively to claims that there is no reason for Janet to have been moved if they only needed the room on the third floor, that there is no reason for Shirley not to have been moved instead of Janet, and that there is no way in which Shirley is better than Janet. The context permits one to infer that Shirley continues to live on the third floor from which Janet has been moved. Janet is thus assuming that a person does not deserve to be moved from the third floor to the attic if there is someone else who could be moved who is not better than that person in any way. There is no evidence in the context that movement between floors in this fictional residence was based on merit. Further, Janet’s assumption would make it impossible to move anybody if the two worst people on the third floor were equally bad in all relevant respects; thus, it is impossible to implement in all situations. Thus her argument is a bad one; her conclusion does not follow.

Inference-licensing covering generalization: Anyone who is not worse than somebody else on the third floor does not deserve to be moved from it.

Evaluation of inference-licensing covering generalization: As pointed out in the analytical comments, the policy is unworkable. If there is no single worst person on the third floor, it would be impossible to move one person to make room for a new arrival.

28. Johann Philipp Becker, a German living in Geneva, also claimed to have founded the International [Working Men’s Association, i.e. the First International–DH]. “In 1862,”

Becker wrote to his friend in New York, “I was the co-ordinator [*Miturheber*] of the International Democratic Congress from which sprang in 1864 the International Working Men’s Association.” Becker added that through the International he “acquired a systematic cosmopolitan-Communist sphere of activity.” (Katz 1992, 1)

Premises:

“In 1862,” <Johann Philipp> Becker wrote to his friend in New York, “I was the co-ordinator [*Miturheber*] of the International Democratic Congress from which sprang in 1864 the International Working Men’s Association.”

Conclusion:

Johann Philipp Becker, a German living in Geneva, also claimed to have founded the International <Working Men’s Association>.

Context: Katz begins his book on the International Working Men’s Association (the so-called “First International”) by discussing its foundation. He reports several claims as to the identity of its founder: Karl Marx, Ernst Fribourg, Pierre Vésinier, Giuseppe Mazzini, and here Johann Philipp Becker.

Field: history (labour history)

Analytical comments: This argument is a common scholarly form of reasoning: supporting a statement about what someone claimed by quoting their words. In this case, the author’s statement is not well supported. To write that one co-ordinated a congress from which two years later an association sprang is not to claim that one founded the association. Becker may in fact have claimed to be the founder of the First International, but this quotation does not prove that he did so.

Inference-licensing covering generalization: Someone who writes that he coordinated a congress from which an organization sprang two years later is claiming to have founded that organization.

Evaluation of inference-licensing covering generalization: The generalization is false. It is one thing to coordinate a congress. It is another thing to found an organization which springs from the congress. In fact, co-ordination of a congress need not even mean initiating the congress.

29. The introduction to *Rules for Drawing <the Several Parts of Architecture>* [by the Scottish architect James Gibbs, published in 1732–DH] lays stress on the need to divide the members and parts of buildings in such a manner as to avoid fractions which might cause mathematical complications, and so run builders into the deadly risk of “incorrectness” or “laxity of taste”. The whole trend of the work is academic, aiming in the manner of the Palladian age at faithfully correct classicism rather than at the greater fancifulness of Baroque. Only three of the twelve fireplaces drawn have broken pediments in the compositions above them; the feeling of the book is remote from the more Baroque designs, for fireplaces or monuments, allowed by Gibbs himself in his volume only four years earlier than this. One senses, amid excellent drawings and helpful points for those who wished to work effectively within a particular convention, that Gibbs himself, at fifty, may by now, for professional reasons and despite his non-Palladian training, have largely conformed to the generally fashionable Palladianism. Even the

“exotic pedestals”, in others words those that were not in accordance with one of the five “regular” orders, are conventional beside some of those drawn in the later plates of the *Book of Architecture* [also by Gibbs, published in 1728–DH]. By comparison with what Gibbs allowed himself before and during 1728, his days of Roman training, and of acquaintanceship with high Baroque, seem somewhat remote. Gibbs makes the point, in his introduction, that Palladio had excelled the rest in “dividing and adjusting” the orders, so that he had therefore followed the Vicentine master; Palladio is also quoted as an unchallengeable authority on entablatures. But the *Book of Architecture* is also quoted as a source for a larger selection of doorways, windows, and niches, and here the builders of 1732 could still, if their patrons so willed it, derive patterns for embellishments less strictly in accordance with the “Palladian” taste. (Little 1955, 112)

Premises:

Only three of the twelve fireplaces drawn [in the *Rules for Drawing*–DH] have broken pediments in the compositions above them; the feeling of the book is remote from the more Baroque designs, for fireplaces or monuments, allowed by Gibbs himself in his volume only four years earlier than this.

Even the “exotic pedestals”, in others words those that were not in accordance with one of the five “regular” orders, are conventional beside some of those drawn in the later plates of the *Book of Architecture*.

Gibbs makes the point, in his introduction, that Palladio had excelled the rest in “dividing and adjusting” the orders, so that he had therefore followed the Vicentine master; Palladio is also quoted as an unchallengeable authority on entablatures.

Conclusion:

The whole trend of the work is academic, aiming in the manner of the Palladian age at faithfully correct classicism rather than at the greater fancifulness of Baroque.

Context: In a biography of the Scottish architect James Gibbs, the author is describing Gibbs’ *Rules for Drawing the Several Parts of Architecture*, published in 1732.

Field: biography (architecture)

Analytical comments: The fourth sentence of the quoted passage more or less restates the same conclusion, and could be substituted for the version used in the standardized argument above.

The conclusion follows from the information given, in virtue of the differences between Palladian classicism and Baroque architectural fancifulness.

Inference-licensing covering generalization: If only three of the twelve fireplaces drawn in a book have broken pediments in the compositions above them, if the feeling of the book is remote from the more Baroque designs for fireplaces or monuments allowed in an earlier volume by the same author, if even the exotic pedestals not in accordance with one of the five regular orders of Palladianism are conventional beside those of the earlier book, if the author in his introduction justifies following Palladio on the basis of his excelling others in dividing and adjusting the orders, and if Palladio is quoted as an unchallengeable authority on entablatures, then the whole trend of the book is academic, aiming in the manner of the Palladian age at faithfully correct classicism rather than the greater fancifulness of Baroque.

Evaluation of inference-licensing covering generalization: Enough details are described to make

the generalization highly plausible. It could be defeated by evidence that, despite the details given, some part of the book is more Baroque than Palladian.

30. Our problems, however, are not so much with printing the material as with distributing it. Every so often a large group of distributors gets caught. The head of the distribution network, who had contacts with the majority of drop-off points, was arrested just a few months into the “war.” They had been observing him for a while, checking out his routes, and then they grabbed him and a few others. A group arrest of distributors is always a big blow, since rebuilding such a network requires long and tedious work. Moreover, while at the beginning of martial law we literally had crowds of people clamouring to be distributors, over time this began to come to a halt. If you put something in someone’s hands, they’d still pass it along, but people stopped coming to us on their own. The optimal solution was to cut back the numbers of *Tygodnik Mazowsze* we printed at the center, while at the same time producing stencils that local union groups could use to make their own copies of the journal. (Łopiński, Moskit & Wilk 1990, 68-69)

Premises:

Rebuilding such a network [of distributors–DH] requires long and tedious work.

At the beginning of martial law we [the owners of *Tygodnik Mazowsze*–DH] literally had crowds of people clamouring to be distributors.

Over time this [people volunteering to be distributors] began to come to a halt.

Conclusion:

A group arrest of distributors is always a big blow.

Context: The authors are recounting their experiences as leaders of the underground Solidarity movement during the early years of martial law in Communist Poland, in the early 1980s. The above passage comes from a description of their difficulties in producing and distributing anti-government literature (including radio broadcasts and cassette distribution).

Field: political science (Poland in the early 1980s)

Analytical comments: The authors advance their argument against the background of their effort to maintain communication with their members and supporters. Thus, it is assumed that they will continue to try to distribute their magazine after a group arrest of distributors. They cite two mutually enhancing reasons why such a group arrest is a big blow: the work required to rebuild the network and the decline over time in the number of people volunteering to distribute. Either of these reasons by itself would show that a group arrest is a big blow; in combination, they indicate even greater damage. Thus, they are not giving two completely independent reasons for their conclusion, as the word *moreover* might indicate. Rather, the support is cumulative.

Inference-licensing covering generalization: A group arrest of those engaged in a common task is a big blow if it requires long and tedious work to rebuild a network of those performing the task and people are no longer volunteering for the task.

Evaluation of inference-licensing covering generalization: The generalization is true, provided that it is important to ensure that the common task continues to be performed. In the particular instance, the organization’s leaders softened the blow by reducing the need to coordinate

centrally the task of distribution.

31. But there is a streak of masochism in the Canadian view of the White House which makes Canadians reluctant to accept the notion that their prime ministers have been firm in the face of presidential abuse. Such a notion is a threat to many Canadians' deeply imbedded poor-us psyche, which requires that the presidents subjugate the prime ministers. Teddy Roosevelt noticed as early as the tum of the century, and Pearson and Dean Rusk noticed later, that anti-Americanism is a Canadian necessity.

"Canadians," said the first Roosevelt, "like to indulge themselves as a harmless luxury in a feeling of hostility to the United States. Practically this does not operate at all. Practically Canada will take an American, Van Horne, to run its railway system and America will take a Canadian, Hill, to run its. . . . But the average Canadian likes to feel patriotic by jeering at the man across the border, just as to a lesser degree the average Scotchman for similar reasons adopts a similar attitude toward England."

Pearson, who in the United States is considered Canada's greatest statesman, took the thought a step further, asserting: "worry about the Americans and their friendly pressures is still probably the strongest unifying Canadian force. At a time when some of us are in doubt about the nature or even the reality of a separate Canadian identity . . . we can stand shoulder to shoulder, one thin but unbroken red line facing Washington and proclaim: 'No surrender.'"

The Canadian attitude was a factor which exacerbated the strains. Predisposed to the suspicion of Oval Office subjugation, Canadians would tend to find neglectful treatment by the presidents on occasions when it wasn't there. Sometimes they might have done well to question the behaviour of their own prime ministers toward the White House. "Sometimes," said Jack Pickersgill, a cabinet member and advisor to prime ministers for three decades, "I thought they treated us like adults and we often acted like adolescents."

Rusk, secretary of state for Kennedy and Johnson, grew distressed in his Canadian diplomatic ventures, finding in the Ottawa officials a "knee-jerk disposition to disagree—just to demonstrate independence." Finally, at a NATO foreign ministers' meeting, he decided he'd taken enough, and when Paul Martin, External Affairs minister, asked him his position on a certain issue, he used a new tact [*sic*]. "My friend," said Rusk, "you speak first because if you speak first I might be able to agree with you. But if I speak first, you would be compelled to disagree." (Martin 1982, 17-18)

Premisses:

"Canadians," said the first [Theodore–DH] Roosevelt, "like to indulge themselves as a harmless luxury in a feeling of hostility to the United States. Practically this does not operate at all. Practically Canada will take an American, Van Horne, to run its railway system and America will take a Canadian, Hill, to run its. . . . But the average Canadian likes to feel patriotic by jeering at the man across the border, just as to a lesser degree the average Scotchman for similar reasons adopts a similar attitude toward England."

<Lester> Pearson, who in the United States is considered Canada's greatest statesman, took the thought a step further, asserting: "worry about the Americans and their friendly pressures is still probably the strongest unifying Canadian force. At a time when some of us are in doubt about the nature or even the reality of a separate Canadian identity . . . we can stand shoulder to shoulder, one thin but unbroken red line facing Washington and proclaim: 'No surrender.'"

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Conclusion:

Teddy Roosevelt noticed as early as the turn of the century, and <Lester> Pearson and Dean Rusk noticed later, that anti-Americanism is a Canadian necessity.

Context: In his book on the relationship between the presidents of the United States and the Canadian prime ministers, journalist Lawrence Martin devotes his first chapter to a general characterization of their relationship. He claims that the Canadians' indulgence in visible disdain for their American counterparts has played a role in shaping the political relationship between the prime ministers and presidents. He then notes a "streak of masochism" in the Canadian view of the White House which makes Canadians reluctant to accept that their prime ministers have been firm in the face of presidential abuse. The above-quoted passage follows.

Field: history (North American)

Analytical comments: This passage is a common type of argument in the present sample, a use of direct quotation to support a claim about what one or more people think. In this case, a claim that three senior politicians—one Canadian, two American—noticed that anti-Americanism is a Canadian necessity is followed by one paragraph of quotation for each of them. Whether the quotations support the conclusion is debatable; it depends what one means by *anti-Americanism*. From the quotation by Theodore Roosevelt, one can infer (assuming Roosevelt was honestly speaking his mind on the occasion when he uttered the quoted words) that he thought that Canadians liked to indulge a feeling of hostility to the United States, a feeling which however had no practical consequences. From the quotation by Pearson, one can infer (assuming honesty) that Pearson thought that Canadians were worried about the Americans and their friendly pressures. From the quotation by Rusk, one can infer (assuming honesty) that Rusk thought that Canadian officials in their discussions with American officials were inclined to disagree just to demonstrate their independence. Of these three thoughts, only that of Roosevelt clearly amounts to the thought that anti-Americanism is a Canadian necessity; neither worrying about friendly pressures nor automatically disagreeing to demonstrate one's independence amounts to being *against* a certain group (or individual).

Inference-licensing covering generalization: Whoever says that citizens of country C like to indulge themselves in a feeling of hostility to country A, or that worry about As and their friendly pressures is probably the strongest unifying force among Cs, or that officials of C have a knee-jerk disposition to disagree with officials of A to demonstrate their independence, is noticing a

necessity in C to be anti-A.

Evaluation of inference-licensing covering generalization: The generalization holds only for the first of the three disjuncts, as indicated in the analytical comments.

32. Prediction began with the determination of neap and spring tides. Neap tides occur during the first and third quarter phases of the moon. At these times, tidal range is the smallest of the entire lunar month. Spring tides appear during full and new moon and the waters at these periods manifest maximum range; the highest high tides and the lowest low tides appear. Obviously a spring tide offered the most favorable time for an amphibious attack over Betio's coral reef. (McKiernan 1983, 212)

Premises:

Neap tides occur during the first and third quarter phases of the moon.

At these times, tidal range is the smallest of the entire lunar month.

Spring tides appear during full and new moon.

The waters at these periods [spring tides–DH] manifest maximum range.

The highest high tides and the lowest low tides appear.

Conclusion:

A spring tide offers the most favorable time for an amphibious attack over Betio's coral reef.

Context: The author is describing how United States Admiral Turner picked the time to conduct an amphibious attack on the island of Tarawa in the Pacific Ocean in 1943. This passage reports the first phase of the reasoning by which a time was chosen.

Field: history (military history)

Analytical comments: The conclusion follows in virtue of the principle that a time of maximum tides offers the most favourable time for an amphibious attack over a coral reef. The principle is justified by the fact that the most favourable time to cross a coral reef with amphibious craft (which have a rather deep draft) is when the water over the reef is highest.

Inference-licensing covering generalization: The most favourable time for an amphibious attack over Betio's coral reef is when the high tides are highest.

Evaluation of inference-licensing covering generalization: Assuming that the reef is not far below the surface at normal times, this generalization is correct.

33. A field in which government regulation was particularly active was colonial trade. The colonies were regarded as sources of wealth for the mother country, and in general no outsiders were allowed to trade with them. Moreover, colonial competition with home industry was discouraged or forbidden. But the relation was not altogether one-sided. In North America, for instance, the British subsidized the production of indigo; and the raising of tobacco in England was forbidden, thus assuring the colonies a monopoly of that lucrative crop. (McNeill 1986, 433)

Premises:

No outsiders [countries other than the mother country or other colonies–DH] were allowed to trade with the colonies.

Colonial competition with home industry was discouraged or forbidden.

In North America the British subsidized the production of indigo.

The raising of tobacco in England was forbidden, thus assuring the colonies a monopoly of that lucrative crop.

Conclusion:

The relation [between the mother country and its colonies–DH] was not altogether one-sided [in favour of the mother country–DH].

Context: In his comprehensive history of western civilization, McNeill comes to the period between 1660 and 1789, which he entitles “Absolutism and aristocracy.” Here he is discussing the impact of governmental regulations and policies on the economic life of European states in this period. This paragraph begins his consideration of government regulation of colonial trade.

Field: history (western civilization)

Analytical comments: This argument is a generalization from instances. But since the generalization is a weak one (that not all the regulations of colonial trade favoured the mother country at the expense of its colonies), the conclusion follows definitely, giving that subsidies and monopolies are to the advantage of their recipients.

Inference-licensing covering generalization: If mother countries do not allow outsiders [countries other than the mother country or other colonies–DH] to trade with the colonies and discourage or forbid colonial competition with home industry, but a mother country subsidizes the production of a product in some of its colonies and forbids raising a lucrative crop at home, thus ensuring a monopoly for its colonies, then the commercial relation between mother country and colonies is not altogether one-sided.

Evaluation of inference-licensing covering generalization: The generalization is clearly true. The first two conditions favour the mother country at the possible expense of the colony. The latter two favour the colony at the possible expense of the mother country.

34. The outlook was black for Assyria. Sin-shar-ishkum in desperation sought help from both Scythians and Egyptians, but it was a vain hope. The Scythians double-crossed him. (Mould 1966, 303-304)

Premises:

Sin-shar-ishkum in desperation sought help from both Scythians and Egyptians.

The Scythians double-crossed him [Sin-shar-ishkum–DH].

Conclusion:

It [The help Sin-shar-ishkum sought from the Scythians and Egyptians–DH] was a vain hope.

Context: In a textbook on the historical-critical study of the Bible, the author is describing the decline and fall of Assyria at the end of the seventh century BCE. Sin-shar-ishkum, ruler of Assyria from 629-612 BCE, faces an invasion of his capital Nineveh by a combined force under the neo-Babylonian emperor Nabopolassar and the Median Cyaxeres.

Field: history (Biblical)

Analytical comments: When a ruler seeks help from two nations and one of them double-crosses him, then his hope for help is at least partly in vain. But it might not be completely empty, if the other one provides the help requested. Thus this argument does not conclusively establish its conclusion. The author would have provided better support if he had stated here what he writes a bit later, that the Egyptians did not provide help until after the feared attack had taken place.

Inference-licensing covering generalization: If a desperate leader seeks help from two countries but one of them double-crosses him, then his hope for help is vain.

Evaluation of inference-licensing covering generalization: The generalization is not necessarily true. The other country might provide enough help by itself.

35. A history of easy bruising or coagulation difficulties, particularly at a prior operation, or a known coagulopathy in a preoperative surgical patient requires a hematologic evaluation before surgery because simple measures may prevent the complication of significant intraoperative bleeding. Coagulation factor deficiencies or platelet dysfunction may be a contributing factor in the etiology of hemorrhage, and replacement therapy may obviate severe complications. Knowledge of the coagulation system with its intrinsic and extrinsic pathways is important in appropriate preventive therapy. (Nelson & Schwartz 1993, 208)

Premises:

Simple measures may prevent the complication of significant intraoperative bleeding [in patients with a history of easy bruising or coagulation difficulties or a known coagulopathy].

Coagulation factor deficiencies or platelet dysfunction may be a contributing factor in the etiology of hemorrhage.

Replacement therapy may obviate severe complications.

Knowledge of the coagulation system with its intrinsic and extrinsic pathways is important in appropriate preventive therapy.

Conclusion:

A history of easy bruising or coagulation difficulties, particularly at a prior operation, or a known coagulopathy in a preoperative surgical patient requires a hematologic evaluation before surgery.

Context: In a collectively written textbook on gynecologic and obstetric surgery, these two authors begin the body of their chapter on hemorrhage and shock by discussing preoperative evaluation. In the cited passage they are recommending preoperative evaluation for certain types of patients as a way to avoid bleeding complications during surgery.

Field: surgery (obstetrics and gynecology)

Analytical comments: The vagueness of the argument forces a non-specialist to accept the recommendation on the authority of its authors. It appears that the simple measures required to prevent patients whose blood does not coagulate well from excessive bleeding during an operation, with attendant possibly severe complications, vary according to the specific impairment of the coagulation system, and that a hematologic evaluation can discover the relevant aspects of the impairment. The passage does not say so; one must guess at these speculations in order to make sense of the argument.

Inference-licensing covering generalization: If simple measures may prevent significant intraoperative bleeding in patients with coagulation problems, if coagulation factor deficiencies or platelet dysfunction may be a contributing factor in the etiology of such hemorrhage, if replacement therapy may obviate severe complications, and if knowledge of the coagulation system with its intrinsic and extrinsic pathways is important in appropriate preventive therapy, then a preoperative surgical patient of one of these types requires a hematologic evaluation before surgery.

Evaluation of inference-licensing covering generalization: The generalization is plausible if the function of the preoperative hematologic evaluation is to provide knowledge of a patient's coagulation system which will indicate what measures to take to prevent excessive bleeding during the operation.

36. *P<hilotheus>*. I perceive, *Tim<otheus>*, thou resolv'st never to be long in the right: for observe, superstition is to be charg'd upon those, who say these things are injoin'd by God, and necessary to religion, when in Truth they are not so. (Oldisworth 1709, 141)

Premises:

Superstition is to be charg'd upon those, who say these things are injoin'd by God, and necessary to religion, when in Truth they are not so.

Conclusion:

Tim<otheus>, thou resolv'st never to be long in the right.

Context: The fictional characters Timotheus and Philatheus are discussing what constitutes superstition. Philatheus supports those "dissenters" in early 18th century England who opposed such practices as making the sign of the cross with holy water and wearing surplices as "Popery," i.e. customs derived from the Roman Catholic Church; Timotheus defends these practices. Philatheus has defined *superstition*, with the apparent agreement of Timotheus, as undertaking to make laws of prescribing and refraining in the name of God where God has left us at liberty. Asked to apply this definition, Timotheus has responded by pointing out that dissenters absolutely refuse to make a sign of the cross with holy water or to wear surplices, even though God has made no laws against these things.

Field: theology

Analytical comments: Philatheus' inference assumes that Timotheus will soon claim that certain things are enjoined by God and necessary to religion when in truth they are not—i.e. making the sign of the cross with holy water and wearing surplices. Recognizing this assumption, Timotheus immediately objects: "And whoever pretended to say they were injoin'd by God?" He treats these practices as enjoined by the Church (i.e. of England), whose authority is to be obeyed. In this stretch of the conversation at least, Philatheus seems to have jumped to a hasty conclusion.

Although the subject-matter of this dialogue is not likely to interest many people nowadays, its methods of reasoning (e.g. refutation by logical analogy) are of interest to the student of argumentation. The subtitle of the book explains that in it "some attempts [are] made towards the discovery of a new way of *reasoning*, intirely unknown both to the ancients and moderns."

Inference-licensing covering generalization: None. (This is a rare example in this collection of an argument or inference with no content expression common to a premiss and the conclusion. There is not even an implicit time constant in common; the premiss is put forward as the timeless consequence of a timeless definition. The premiss can be made relevant to the conclusion by supposing that the error alleged in the conclusion is the error of superstition. In that case, the inference-licensing covering generalization would be: Thou, Timotheus, say'st these things are injoin'd by God, and necessary to religion, when in Truth they are not so.)

Evaluation of inference-licensing covering generalization: Timotheus challenges the inference on the ground that he defends making the sign of the cross with holy water and wearing surplices as injunctions of the Church, not as enjoined by God.

37. Moreover, if, objectively, stabilization and the perpetuation of the structural dependance of workers on both wage labour and peasant or subsistence production were mutually incompatible, there were compelling financial reasons why mineworkers with years of industrial service should yet have been prepared to accept that at the close of their working lives they had necessarily to return to an impoverished rural 'home', and the level of subsistence provided by weakened kinship and agricultural systems. A UMHK [Union Minière du Haut Katanga–DH] attempt to settle pensioned workers on agricultural land around Lubumbashi and Panda-Shituru in the late 1930s, for instance, was a complete failure. Only two men—one from Rhodesia and one from Sierra Leone—elected to remain in the concession, while the rest opted to return to their home villages. And for the majority of workers with nothing to show for their service, there was even less choice. (Perrings 1979, 241)

Premises:

Only two men [pensioned workers–DH]—one from Rhodesia and one from Sierra Leone—elected to remain in the concession [around Lubumbashi and Panda-Shituru–DH].

The rest <of the pensioned workers> opted to return to their home villages.

Conclusion:

A UMHK attempt to settle pensioned workers on agricultural land around Lubumbashi and Panda-Shituru in the late 1930s was a complete failure.

Context: In the concluding chapter of a book on black mineworkers in central Africa, Perrings is explaining why African mine workers were willing to accept the prospect of return to their rural place of origin upon their retirement. The failure of one mine company to settle its pensioners nearby illustrates the comparative attractiveness of return "home."

Field: history (labour history)

Analytical comments: This conclusion follows definitely from the premisses, given the assumed background information that the company would have had many more than two newly retired workers in the period in question, in virtue of the fact that a scheme for pensioned workers is a failure if only a very small percentage of them take advantage of it.

Inference-licensing covering generalization: An attempt to provide a certain benefit to workers is a complete failure if only a small percentage of those eligible use it.

Evaluation of inference-licensing covering generalization: The generalization is obviously true.

38. CAP4 and DAP-FORTRAN are true full-array programming languages. CAP4 is a simple, machine-oriented language whose assembly-like instructions relate directly to the functions executed by the CLIP processing element. Hence, the user has direct control over the step-by-step operations of the cellular logic array. In contrast, the user of DAP-FORTRAN is not conscious of the specific data manipulations being made. (Preston 1986, 432)

Premises:

CAP4 is a simple, machine-oriented language whose assembly-like instructions relate directly to the functions executed by the CLIP processing element.

Conclusion:

The user [of CAP4–DH] has direct control over the step-by-step operations of the cellular logic array.

Context: This passage comes from a comparison of programming languages developed for programming “cellular logic arrays,” which are used in image processing by computers. Of the two languages mentioned in the passage, CAP4 is used to program the CLIP series of computers developed at University College London, while DAP-FORTRAN is a FORTRAN extension written by International Computers Ltd. to manipulate the DAP, a kind of computer. (Preston 1986, 429-430).

Field: electrical/computer engineering

Analytical comments: The conclusion of this argument follows definitely from its premiss, in virtue of the fact that the user of a programming language whose assembly-like instructions relate directly to the functions executed by the computer on which it runs has direct control over the step-by-step operations of a programme produced with that language.

Inference-licensing covering generalization: The user of a simple, machine-oriented language whose assembly-like instructions relate directly to the functions executed by the processing element of the computer it operates has direct control over the step-by-step operations of the thing it is programming.

Evaluation of inference-licensing covering generalization: The generalization is obviously true. With such a language, the instructions written by the programmer correspond directly to the steps taken by the programme produced.

39. The situation [of many young post-secondary graduates in Italy waiting for a long time for a professional occupation to open up for them–DH] began to change at the start of the 1980s. Since 1984 work-training contracts not only authorise the recruitment of young people with complete liberty of choice but also provide not inconsiderable grants. Moreover, a good part of the increase in unemployment through loss of jobs is due to the exit from the CIG [Cassa Integrazione Guadagni–DH] of workers from large firms who are often older and poorly qualified. Besides there have also been changes in the

educational system and in preparation for employment: a slow-but-sure readjustment in the links between educational attainment and what is and what is not seen to be acceptable in the matter of placement. Young people and their families are beginning to accept the idea that vocational qualifications do not allow automatic access to high positions. Added to this, the climate within schools has changed. Indulgence and permissiveness have lived their time and given way afresh to an acceptance of selection and discipline. So it is that both from the point of view of demand and supply the factors which curbed the inflow of young people into the world of employment are gradually losing distinction [*sic*]. The Italian anomaly of youth unemployment, particularly of young people who hold qualifications, is on the way to disappearing, in the Centre-North at least; but it will take some time for the process to work itself through. (Reyneri 1994, 106)

Premises:

Since 1984 work-training contracts not only authorise the recruitment of young people with complete liberty of choice but also provide not inconsiderable grants.

A good part of the increase in unemployment through loss of jobs is due to the exit from the CIG of workers from large firms who are often older and poorly qualified.

There have also been changes in the educational system and in preparation for employment: a slow-but-sure readjustment in the links between educational attainment and what is and what is not seen to be acceptable in the matter of placement. Young people and their families are beginning to accept the idea that vocational qualifications do not allow automatic access to high positions.

The climate within schools has changed. Indulgence and permissiveness have lived their time and given way afresh to an acceptance of selection and discipline.

Conclusion:

... from the point of view of demand and supply the factors which curbed the inflow of young people into the world of employment are gradually losing distinction.

Context: In a chapter on long-term unemployment in Italy, the author explains its concentration among young people partly by the entrenched position of older workers and partly by the failure of young people in the 1970s to adjust to the demands of employment: lax selection procedures for higher education, ideologically based hostility to industry, unrealistic expectations of a professional occupation, lack of self-restraint, hostility to discipline and hierarchy. Then, in the above passage, he notes that this situation has begun to change.

Field: sociology (unemployment)

Analytical comments: The author nicely signals the different types of changes summed up in his conclusion with the words *moreover*, *besides* and *added to this*—a signal I have reflected in the above grouping of four premisses, some consisting of more than one sentence. The first two premiss groups point to changes in the demand for young workers, the second two to changes in the supply. That these are changes in the factors which previously made it difficult for young Italians to find permanent jobs follows from his earlier description of those factors. Thus, this argument is a generalization from instances, which supports the claim that certain factors are losing importance by itemizing the changes in four of them. The conclusion, charitably

interpreted, follows definitely from the premisses from which it is drawn.

Inference-licensing covering generalization: In a country with high youth unemployment due to the entrenched position of older workers and the failure of young people to adjust to the labour market, work-training contracts for young people and job losses by older and poorly qualified workers increase the demand for young workers, and readjustment of educational attainment to available jobs and more acceptance of selection and discipline in schools increase the supply of eligible young job applicants.

Evaluation of inference-licensing covering generalization: The generalization seems obviously true. On the demand side, work-training contracts are an obvious addition to demand, and job losses by older workers would tend to open up positions which younger workers could fill. On the supply side, realistic expectations and better education would produce more eligible job applicants.

40. Regardless of how the object is held within the inner case, proper wrapping materials and techniques are required to minimize the risks of abrasion. The most frequently used wrapping material is acid-free tissue. With objects having hard surfaces, a fairly loose tissue wrapping is appropriate. With very delicate surfaces, a tighter wrapping is required since movement within loose tissue wrapping could cause abrasion. (Richard 1990, 413)

Premiss:

Movement within loose tissue wrapping could cause abrasion <to very delicate surfaces>.

Conclusion:

With very delicate surfaces, a tighter wrapping <in tissue of art objects for transit> is required.

Context: In a preprint of a conference paper on packing delicate art objects for transit, the author is explaining how to minimize the risk of abrasions to their surfaces.

Field: museum curatorship

Analytical comments: This is an example of means-end reasoning. The desired end is to minimize abrasions to the surfaces of delicate art objects in transit. The recommended means is to wrap those with very delicate surfaces tightly with acid-free tissue before inserting them in their inner cases. The author justifies this recommendation by pointing out that the alternative of loose wrapping could cause abrasion. Given that tight and loose tissue wrapping are the only options, the conclusion follows definitely from the premiss in virtue of the desired end of minimizing abrasions.

Inference-licensing covering generalization: Art objects with surfaces which could suffer abrasion from movement within loose tissue wrapping require tighter tissue wrapping for transit.

Evaluation of inference-licensing covering generalization: Given the contextually supplied assumption that the object is to be wrapped in acid-free tissue, the contextually supplied goal of minimizing the risks of abrasion, and the fact that objects move less within tightly wrapped tissue than within loosely wrapped tissue, the generalization is obviously correct.

41. Durham stated that he had come to Canada thinking he would find a conflict between the

people and the executive, but instead, he had found

. . . two nations warring in the bosom of a single state: I found a struggle, not of principles, but of races. The national feud forces itself on the very senses, irresistibly and palpably, as the origin or essence of every dispute which divides the community; we discover that dissensions, which appear to have another origin, are but forms of this constant and all-pervading quarrel; and that every contest is one of French and English in the outset, or becomes so ere it has run its course. (Rioux 1973, 71)

Premises:

The national feud forces itself on the very senses, irresistibly and palpably, as the origin or essence of every dispute which divides the community.

Dissensions, which appear to have another origin, are but forms of this constant and all-pervading quarrel.

Every contest is one of French and English in the outset, or becomes so ere it has run its course.

Conclusion:

[There is—DH] a struggle, not of principles, but of races.

Context: In this essay on the development of ideologies in the Canadian province of Quebec, the author recalls a celebrated passage from the report of Lord Durham in 1840, whom the British government sent to investigate the causes of armed rebellions in 1837 in Upper Canada (now part of the Canadian province of Ontario) and Lower Canada (now part of the province of Quebec). Although the rebellions were popular rebellions by both French-speaking and English-speaking residents against colonial oligarchies, Durham argues in this passage that the struggle in the Canadas is a struggle of races (i.e. French and English) rather than of principles. He went on to recommend that the British government transform Lower Canada into an English province, with English people, laws, language and legislature. Durham's report remains to this day a focus of nationalist resentment among French-speaking Quebeckers.

Field: political science (Canadian politics)

Analytical comments: This argument is a generalization from instances, which the premises claim to have been exhaustively surveyed. The conclusion is in fact little more than a restatement of the premises, which are themselves repetitious. If Durham's report did not go on to give specific instances of apparently non-“racial” disputes which were or became disputes between French and English, then his argument here can fairly be accused of begging the question. That is a fault of the premises rather than of the inference; to beg the question is to use as an ultimate premiss a proposition whose justification involves appeal to the truth of the conclusion.

Inference-licensing covering generalization: If a feud between two nations is the origin or essence of every dispute which divides a community, and if dissensions which appear to have another origin are forms of this national feud, and if every contest is or becomes one between the two nations, then there is a struggle in the community of races, not of principles.

Evaluation of inference-licensing covering generalization: The generalization is true by definition.

42. Sixteenth-century readers took a broad and inclusive view of what a good epic could be. Homer, Vergil, Xenophon, Heliodorus, Achilles Tattius, Ariosto, Tasso—each of these men was usually regarded as the author of “an absolute heroic poem,” and in this list the Elizabethans proudly included their own Sidney and Spenser. (Rose 1968, 1)

Premises:

Homer, Vergil, Xenophon, Heliodorus, Achilles Tattius, Ariosto, Tasso—each of these men was usually regarded <by sixteenth-century readers> as the author of “an absolute heroic poem.” In this list the Elizabethans proudly included their own <Sir Philip> Sidney and <Edmund> Spenser.

Conclusion:

Sixteenth-century readers took a broad and inclusive view of what a good epic could be.

Context: The above argument is the first paragraph of the introduction to a collection of studies of the Elizabethan English poets Sir Philip Sidney and Edmund Spenser.

Field: literary criticism (poetry, English, Elizabethan)

Analytical comments: The author expects the audience to recognize that “the Elizabethans” are the inhabitants of sixteenth-century England. His conclusion follows definitely from his premisses if and only to regard Homer, Vergil, Xenophon, Heliodorus, Achilles Tattius, Ariosto, Tasso, Sidney and Spenser as being each the author of “an absolute heroic poem” is to take a broad and inclusive view of what a good epic could be. This judgement would be defended by noting that “an absolute heroic poem” is a good epic and that the authors mentioned wrote a variety of types of poetry (or, in the case of Xenophon at least, prose).

Inference-licensing covering generalization: Readers who usually regard Homer, Vergil, Xenophon, Heliodorus, Achilles Tattius, Ariosto, Tasso, Sidney and Spenser as authors of “an absolute heroic poem” take a broad and inclusive view of what a good epic can be.

Evaluation of inference-licensing covering generalization: One needs to know something about the variety of types of poetry written by the named authors in order to evaluate this generalization. Since Xenophon wrote prose accounts of actual historical events, whereas Homer and Vergil wrote more traditional epic poems, the inclusion of both of them as authors of “an absolute heroic poem” (i.e. an epic) clearly does involve a broad and inclusive view of epic poetry.

43. During the period of uncertainty and schism, his [Harold Kelman’s–DH] compulsive perfectionism and arduous work did much to keep the Association <for the Advancement of Psychoanalysis> and < the New York Psychoanalytic> Institute going. He was as demanding of himself as of others. To what extent these attitudes influenced Karen <Horney> and had a direct impact on the other members—even antagonizing or alienating some—can only be surmised. Where Karen could not assume a direct dominating or commanding position, she could delegate that role to him. His organizational talents could serve her aims; her prestige and public appeal could further his. In effect, each personality complemented the other; they needed and used each other, fortunately to the advantage of the group. (Rubins 1978, 271)

Premises:

Where Karen <Horney> could not assume a direct dominating or commanding position, she could delegate that role to him.

His [Kelman's–DH] organizational talents could serve her [Horney's–DH] aims.

Her [Horney's–DH] prestige and public appeal could further his [Kelman's–DH] <aims>.

Conclusion:

Each personality complemented the other.

Context: In a book on the life of Karen Horney and her influence on psychoanalysis, the author is discussing the personalities and schisms within the New York Psychoanalytic Institute and the Association for the Advancement of Psychoanalysis, of which Horney was a leading member, between 1943 and 1945. The above passage comes from a description of the role of Harold Kelman, who became president of the Association in 1944.

Field: biography (psychoanalysis)

Analytical comments: The conclusion follows definitely from the information given in the premisses, in virtue of the fact that two people with the features described in the premisses do have personalities which complement each other. It does not follow that they do actually need and use each other; that claim seems better regarded as an independently known description of what happened as a result of their complementary personalities, rather than as a conclusion from the premisses given.

Inference-licensing covering generalization: If one person in an organization can delegate to another direct dominating or commanding positions she cannot assume, if the organizational talents of the second can serve the aims of the first, and if the prestige and public appeal of the first can serve the aims of the second, then the two people have complementary personalities,.

Evaluation of inference-licensing covering generalization: This generalization is correct. An organization needs both spokespeople who can make a good public impression and capable administrators who can make sure that things run well internally.

44. Data obtained from the environmental analyses carried out in the eight hospitals are summarized in Table 1.

The data show that EtO [ethylene oxide, a compound which has been shown to cause genetic mutations in various organisms–DH] pollution is higher where first-generation sterilizers are employed; in those hospitals, the TWA/8-h conc [time-weighted average concentration (of ethylene oxide) during a standard eight-hour working day–DH] was very near the 10 ppm [parts per million–DH] Threshold Limit Value suggested by the American Conference of Governmental Industrial Hygienists, but, as indicated by the TWA/5-min conc [time-weighted average concentration of ethylene oxide during the five minutes following the sterilizer opening, as the mean of values measured every 15 seconds by a photoionization analyzer], the concentration during the workday varied remarkably. With second-generation sterilizers, the TWA/8-h conc was almost 10 times lower than the Italian 3 ppm Threshold Limit Value, yet there were relevant variations (see TWA/5-min conc). (Sarto et al., 1984, 416)

Table 1. Ethylene oxide concentrations in the eight hospitals studied

| Sterilizer | | Ethylene oxide (ppm) | | |
|----------------|---------------|------------------------------|------------------|-----------------|
| | | TWA ^a /5-min conc | TWA/1-cycle conc | TWA/8-h conc |
| 1st-generation | mean \pm SD | 62.5 \pm 46 | 15.8 \pm 9.8 | 10.7 \pm 4.9 |
| | range | 13 - 160 | 3.7 - 35.5 | 3.7 - 20 |
| 2nd-generation | mean \pm SD | 8.6 \pm 11 | 1.1 \pm 1.0 | 0.35 \pm 0.12 |
| | range | 5 - 26 | 0.3 - 2.6 | 0.2 - 0.5 |

^aTime-weighted average

Premises:

The TWA/5-min conc [concentration during the five minutes following the sterilizer opening, as the mean of values measured every 15 seconds by the photoionization analyser, –DH] <of ethylene oxide, where first-generation sterilizers were used at the eight hospitals studied, had a mean value of 62.5 parts per million (ppm), with a standard deviation of 46 ppm and a range of 13 - 160 ppm.>

Conclusion:

The concentration <of ethylene oxide> during the workday <where first-generation sterilizers were employed at the eight hospitals studied> varied remarkably.

Context: In a paper presented at a 1983 symposium on monitoring human exposure to carcinogenic and mutagenic agents, the authors are reporting the results of a study measuring the exposure of 41 workers in sterilizing units at eight hospitals in Italy to ethylene oxide, a compound which causes mutations.

Field: chemistry (occupational health)

Analytical comments: The premiss is the information in the table which is alluded to in the text by the phrase “the TWA/5-min conc.” The conclusion follows definitely from this premiss, given that a standard deviation of 46 and a range of 13 to 160 in comparison to a mean value of 62.5 (on any variable) is a considerable variation. To apply a vague qualitative descriptor like “remarkable” to a particular quantity requires some background knowledge of what would count as small and what as large. The figures in the same table for the second-generation sterilizers show how much less are the standard deviation (11 rather than 46) and range (21 rather than 147) in their case.

Inference-licensing covering generalization: There is remarkable variation if a variable has a mean value of 62.5, a standard deviation of 46, and a range from 13 to 160.

Evaluation of inference-licensing covering generalization: The standard deviation is a conventional statistical measure of variance in a set of data; the higher it is, the greater the variation. A standard deviation which is almost as large as the mean value of a variable is remarkably high.

45. According to McGuire, DTP [desktop publishing–DH] has created a lot of competition in the design field. With the advent of lower priced hardware and the expanded capabilities

of DTP software, many individuals without training or experience, who might not otherwise be involved in design work, are offering design services to businesses and individuals. Many companies who had once used outside vendors in a design capacity have taken those needs in-house to save money and time. (Schiff 1993, 56-57)

Premises:

With the advent of lower priced hardware and the expanded capabilities of DTP software, many individuals without training or experience, who might not otherwise be involved in design work, are offering design services to businesses and individuals.

Many companies who had once used outside vendors in a design capacity have taken those needs in-house to save money and time.

Conclusion:

DTP has created a lot of competition in the design field.

Context: In this book on career opportunities in desktop publishing (DTP), the author devotes a chapter to opportunities in graphic arts. In the design field, he relies on an interview with a DTP designer named McGuire. Here he paraphrases McGuire's supporting evidence for his claim that DTP has created a lot of competition in the design field.

Field: vocational guidance

Analytical comments: This conclusion follows definitely from the premisses in virtue of the fact that experts in a field will face increased competition both from entry of untrained and inexperienced individuals into the field and from companies who had previously bought the expertise from outside doing the job themselves.

Inference-licensing covering generalization: Anything which leads many individuals without training or experience who might not otherwise be providing a certain kind of service to offer that service to businesses and individuals, and which leads many companies who had once paid outside vendors for this service to take those needs in-house to save money and time, has created a lot of competition in that field.

Evaluation of inference-licensing covering generalization: More service providers and fewer service buyers adds up to more competition among service providers. Given the free-market economy assumed by the argument, the generalization is correct.

46. We must confess to the desire to add a fourth need—the need to assuage guilt—to our list. Guilt is such a universal emotion, and assuaging guilt is such a universal need, that we were tempted to add it because it is a powerful motivator of behavior (as any child knows!). Guilt seems to be a target of some service advertising, too. For example, MCI [Microwave Communications Incorporated—DH] has been playing on guilt to sell long-distance phone calls to Mom; Met Life plays on guilt to sell life insurance to heads of families so they won't leave their loved ones unprotected; and the most flagrant example of all is FTD [Florists' Telegraph Delivery—DH], which tugs at our conscience to boost sales of flowers for Mother's Day. (Schneider & Bowen 1995, 265-266).

Premises:

MCI has been playing on guilt to sell long-distance phone calls to Mom.

Met Life plays on guilt to sell life insurance to heads of families so they won't leave their loved ones unprotected.

The most flagrant example of all is FTD, which tugs at our conscience to boost sales of flowers for Mother's Day.

Conclusion:

Guilt seems to be a target of some service advertising.

Context: In this book of advice on how a business providing a service can succeed, the authors distinguish three types of customer needs to which organizations should attend. In this endnote, they report their temptation to add to their list a fourth need, that of assuaging guilt.

Field: business (management science)

Analytical comments: This is a generalization from instances. Since the generalization is weak (some service advertising is targeted at guilt), the conclusion follows definitely, assuming that MCI, Met Life and FTD are service-providing organizations.

Inference-licensing covering generalization: If a long-distance phone company plays on a certain emotion to sell long-distance phone calls to Mom, and if a life insurance company plays on this emotion to sell life insurance to heads of families, and a long-distance flower ordering company plays on this emotion to boost sales of flowers for Mother's Day, then this emotion is a target of some service advertising.

Evaluation of inference-licensing covering generalization: Although it is disputable whether life insurance and flowers are a service or a good, long-distance phone connection certainly is a service. So an emotion which a long-distance phone company plays on in its advertising is certainly a target of some service advertising. The generalization is correct.

47. But the collapse of confidence in the model of technical rationality has broken down the basic assumption of cognitive and moral distance between the manager and the managed, suddenly muddying the clarity of the managerial task by forcing moral terms such as trust and responsibility into discussions of managerial effectiveness. Of course, the force of the bottom line still operates, but the manager now must contend as well with forming consensus, leading a "team," and other activities traditionally more associated with politics than business. Certainly, this recent turn toward the "human,"—that is, the moral and political—aspects of organizational life is of a piece with the switch from the economy conceived as a mechanism driven by the anti-heroic consumer to seeing it as the field in which the entrepreneur can exhibit moral courage. Fitfully, American culture seems to be rediscovering the practical basis of its institutions and its techniques, even if as yet only selectively. (Sullivan 1987, 153)

Premises:

This recent turn toward the "human,"—that is, the moral and political—aspects of organizational life is of a piece with the switch from the economy conceived as a mechanism driven by the anti-heroic consumer to seeing it as the field in which the entrepreneur can exhibit moral courage.

Conclusion:

American culture seems to be rediscovering the practical basis of its institutions and its techniques, even if as yet only selectively.

Context: In an article from an anthology of “new essays in metaphysics,” the author is discussing the change in the model of managerial practice in the United States from one dominated by technical concerns to one that incorporates moral/political considerations. He claims that this change opens the way to a “recovery” of the moral dimension of economic life.

Field: philosophy (social philosophy)

Analytical comments: This argument is a generalization from instances. The generalization is a weak one, amounting to the claim that American culture is rediscovering the practical basis of *some* of its institutions and techniques. Since the generalization is weak, the two instances given are enough to support it. But the conclusion as worded involves two claims which are not part of the premisses: that American institutions and techniques do in fact have a practical basis, and that this fact was known in American culture in an earlier age. If those claims are accepted on the basis of earlier parts of Sullivan’s article, then the conclusion does follow from the information presented.

Inference-licensing covering generalization: A culture which is turning from the technical to the moral and political aspects of organizational life and from seeing the economy as a mechanism driven by the anti-heroic consumer to seeing it as the field in which the entrepreneur can exhibit moral courage is rediscovering the practical basis of its institutions and its techniques, even if as yet only selectively.

Evaluation of inference-licensing covering generalization: The word *practical* must be understood here as referring to a kind of reasoning, contrasted to theoretical reasoning. Practical reasoning, broadly understood, includes an appeal to moral and political considerations. In this sense of *practical*, a focus on the moral and political aspects of organizational life and on the moral courage of the entrepreneur in an economy does reflect an awareness of the practical dimension of some institutions and techniques. Whether this awareness is a rediscovery or a new discovery would depend on whether the culture in question had been aware of it earlier.

48. The lithographed title [of Augustus Earle’s *Views in Australia*–DH] lettered within a vignette of a bush scene: lettered against a boulder with native bushes in the background, a rock wallaby in the right foreground and an artist’s palette and sketchbook in the left foreground. (Wantrup 1987, 412)

Premises:

<The lithographed title of Augustus Earle’s *Views in Australia* is> lettered against a boulder with native bushes in the background, a rock wallaby in the right foreground and an artist’s palette and sketchbook in the left foreground.

Conclusion:

The lithographed title <of Augustus Earle’s *Views in Australia* is> lettered within a vignette of a bush scene.

Context: The above passage comes from a list of Australian rare books published between 1788 and 1900, in which the author gives the title and a brief description of each book listed. Here he

is describing Augustus Earle's *Views in Australia*.

Field: bibliography

Analytical comments: The conclusion follows definitely from the premiss, in virtue of the fact that a scene with a boulder with (Australian) native bushes in the background, a rock wallaby in the right foreground and an artist's palette in the left foreground is an (Australian) bush scene.

Inference-licensing covering generalization: A boulder with Australian native bushes in the background, a rock wallaby in the right foreground and an artist's palette and sketchbook in the left foreground is an Australian bush scene.

Evaluation of inference-licensing covering generalization: The wallaby being an animal found only in Australia, the generalization is correct.

49. Social visiting, both between larger communities, and between communities and outstations, has recently been affected by improved access to communication systems. Today many outstations have two-way radios through which they can communicate with their families on regular schedules; and in larger communities the conventional telephone or radiotelephone can be used for that purpose. Some Central Australian communities are already, through the micro-wave link, part of the STD telephone system, and such access will be extended to most other major groups by 1990. As communications improve, people become more accustomed to using them, and undoubtedly come to depend more and more on this form of contact for keeping in touch with their kin. Such contact certainly does not cut out socially-motivated mobility altogether, but it does allow people to obtain accurate news of their family indirectly. (Young & Doohan 1989, 128).

Premises:

Today many outstations have two-way radios through which they can communicate with their families on regular schedules.

In larger communities the conventional telephone or radiotelephone can be used for that purpose [of communicating with families on regular schedules—DH].

Some Central Australian communities are already, through the micro-wave link, part of the STD telephone system, and such access will be extended to most other major groups by 1990.

As communications improve, people become more accustomed to using them, and undoubtedly come to depend more and more on this form of contact for keeping in touch with their kin.

Such contact certainly does not cut out socially-motivated mobility altogether, but it does allow people to obtain accurate news of their family indirectly.

Conclusion:

Social visiting, both between larger communities, and between communities and outstations, has recently been affected by improved access to communication systems.

Context: In this book on the movement of the aboriginal population in central Australia, the authors are discussing recent changes to the pattern of movements for social visiting.

Field: anthropology (cultural)

Analytical comments: The first three premisses provide direct support for the alleged "improved access to communication systems," in virtue of the fact that two-way radios, conventional

telephones, radiotelephones and the STD telephone system are all communication systems. The last two premisses supports the causal claim in the conclusion by making generalizations about what happens as communication systems improve; although couched as a correlation in the fourth premiss, the description of what happens is evidently intended as a causal claim. Thus the premisses in combination provide definite support for the conclusion.

Inference-licensing covering generalization: In an area where many outstations have two-way radios through which residents can communicate with their families on regular schedules, where in larger communities the conventional telephone or radiotelephone can be used for that purpose, where most major groups are or will soon be part of a telephone system, where people are becoming more accustomed to using these communications systems, where they come to depend more and more on this form of contact for keeping in touch with their kin, and where this form of contact allows people to obtain accurate news of their family indirectly, social visiting, both between larger communities, and between communities and outstations, has recently been affected by improved access to communication systems.

Evaluation of inference-licensing covering generalization: Talking to one's kin across long distances obviously tends to replace some social visiting. The generalization is plausible.

50. A certain neighborhood of this invariant set [represented by a closed curve whose equation has just been given—DH] is compact, and therefore, on the basis of Theorem 6, it will follow from the asymptotic stability that this set will be uniformly asymptotically stable and uniformly attracting; ... (Zubov 1964, 164)

Premises:

A certain neighborhood of this invariant set [represented by a closed curve] is compact. The asymptotic stability <of this invariant set is given by hypothesis>.

Conclusion:

This <invariant> set will be uniformly asymptotically stable and uniformly attracting.

Context: In a book on the methods of the Russian mathematician A. M. Lyapunov and their application, the author is engaged in proving Theorem 54, whose statement takes almost a full page and involves several equations with mathematical symbols likely to be unfamiliar and meaningless to the reader.

Field: mathematics (differential equations)

Analytical comments: The theorem on which the author relies is a universally generalized conditional. The premisses assert that a particular case has the properties mentioned in the antecedent of the universally generalized conditional. The conclusion draws the inference that this particular case also has the properties mentioned in its consequent. Thus, if the theorem is included as a premiss, the argument is formally valid. But it seems more reasonable to interpret the theorem as an inference-licensing covering generalization. Mathematical proofs typically cite previous theorems with a phrase like “by theorem X,” which indicates that theorem X functions as an inference license rather than as a data-type premiss. The phrase “on the basis of” in this passage is likely to be a translation of the standard Russian equivalent for the English “by” in such contexts.

Inference-licensing covering generalization: Theorem 6: “An asymptotically stable closed invariant set M of a dynamical system $f(p, t)$, having a sufficiently small compact neighborhood, is uniformly asymptotically stable and uniformly attracting.” (Zubov 1964, 29)

Evaluation of inference-licensing covering generalization: I take it on faith that the author proved the theorem at the place where it first appeared. If so, the theorem is true.

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