

Conceptual Analysis: A Method for Understanding Information as Evidence, and Evidence as Information

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Abstract. The utility of conceptual analysis for archival science is assessed by means of an exploratory evaluation in which the concept of evidence is analyzed. Usage of the term “evidence” in the philosophies of science, law, and history is briefly reviewed; candidates for necessary conditions of evidentiarieness are identified and examined; and taxonomies are built of evidentiarieness and of archival inference. Correspondences are shown to exist between the concepts of evidentiarieness and relevance, and between the domains of archival science and social epistemology, thereby pointing in promising directions for further research. The tentative conclusion is reached that conceptual analysis may profitably be used to improve understanding of archival concepts.

Keywords: archival science, conceptual analysis, evidence, evidentiarieness, inference, information, philosophy, relevance, social epistemology

Introduction

“The field of evidence is no other than the field of knowledge.”¹

The aim of this paper is to demonstrate the utility of *conceptual analysis* for archival science by conducting an analysis of the concept of evidence. Conceptual analysis is a technique that treats concepts as *classes* of objects, events, properties, or relationships. The technique involves precisely defining the meaning of a given concept by identifying and specifying the *conditions* under which any entity or phenomenon is (or could be) classified under the concept in question. The goal in using conceptual analysis as a method of inquiry into a given field of interest is to improve our understanding of the ways in which

¹ Jeremy Bentham, *An Introductory View of the Rationale of Evidence for the Use of Non-lawyers as well as Lawyers* (ed. James Mill, 1812; first published in vol. 6 of *The Works of Jeremy Bentham*, ed. John Bowring, Edinburgh and London, 1843), p. 2.

particular concepts are (or could be) used for communicating ideas about that field.²

Information science is one field in which important contributions have recently been made through the application (sometimes on a relatively informal basis) of conceptual analysis. Questions such as “What is information?” and “What is a document?” received close attention in the 1990s, and the various suggested answers to these questions continue to be treated as candidate cornerstones of emergent theoretical frameworks in the field.³ In *archival science*, similarly, the ongoing debate about the nature of the record received renewed impetus in the 1990s with the widespread recognition that (what are called) electronic records may not share as many of the properties of physical records as might be thought at first glance.⁴ This paper seeks to demonstrate what kinds of advances might be made possible through the application of the method of conceptual analysis to key archival concepts. It does this by addressing the question “What is *evidence*?”

Two of the assumptions that underlie any positive expectation of the utility of conceptual analysis are (i) the belief that it is at least possible for concept-users to reach some level of agreement as to the nature of the uses to which concepts are put, and (ii) the belief that to reach some agreement of that kind is a prerequisite for the development of useful (and/or interesting) knowledge (and/or theory). These are among the assumptions that are made in the present paper. In addition, it is assumed that any “proof” of the utility of the method lies “in the pudding” – in other words, that it is possible to demonstrate the utility of the method through the production of a result that is perceived to be provocative of original or interesting ideas for directions in which future research may be pushed. In that spirit, the

² The body of method known simply as analysis, and deriving from the work of Frege, Moore, and Russell, lay at the core of much twentieth-century anglophone philosophy, and its adherents continue to exert a huge influence: see, e.g., Brian Leiter, “Introduction”, in Leiter (ed.), *The Future for Philosophy* (Oxford, 2004); and Frank Jackson, *From Metaphysics to Ethics: A Defence of Conceptual Analysis* (Oxford, 1998). Analytic philosophy has a broad scope and there is no single technique that could be claimed as *the* analytic method. One distinctive characteristic that is nonetheless shared by most philosophers in the analytic tradition is the belief that many philosophical problems can be illuminated by clarifying the meanings of the concepts that we use to think about and to express those problems. This is the context in which “conceptual analysis” is to be understood in this paper.

³ See, e.g., Michael Buckland, “Information as Thing”, *Journal of the American Society for Information Science* 42(5) (1991): 351–360; Buckland, “What is a ‘Document’?”, *Journal of the American Society for Information Science* 48(9) (1997): 804–809; and Michèle Tourney “Caging Virtual Antelopes: Suzanne Briet’s Definition of Documents in the Context of the Digital Age”, *Archival Science* 3 (2003): 291–311.

⁴ See, e.g., Luciana Duranti et al., *Preservation of the Integrity of Electronic Records* (Dordrecht and Boston, 2002).

paper concludes with two specific suggestions of lines of work that may potentially prove productive: a collaboration among archival scientists and information scientists with the aim of clarifying the nature of the relationship between evidentiarieness and *relevance*; and an exploration of *social epistemology* as a theoretical foundation for archival science.

Conceptual analysis, of course, is not the only method available for clarifying or establishing evolution in archival concepts. Another plausible approach to the analysis of the nature of evidence would involve conducting a close examination of the arguments and conclusions of others who have written about the properties, functions, and role of evidence in archival, historical, legal, scientific, and other contexts. In the historical context, for instance, an empirical survey could be undertaken of the ways in which “evidence” has been used in the past both by practicing historians, and by philosophers of history. Similarly, in the archival context, we might wish to investigate how archival practitioners and/or archival theorists have employed the concept, and how such usage has reflected or influenced wider archival practice. There is little doubt that studies of these kinds would be helpful in enabling present-day theorists to reach a better understanding of what it means for us to call certain things “evidence.” A preliminary effort is made below to identify some of the more important ideas about evidence that are characteristic of different fields of inquiry. The present paper, however, is not intended as a review of prior analyses of the concept (such as they exist), and thus no attempt is made to provide a comprehensive set of citations to previous work.

Evidence in Theory and in Practice

The concept of evidence has historically been an important component of ideas about the nature of the process by which people construct and use arguments. Since argumentation or reasoning on the basis of evidence is central to what has become known in the modern period as the scientific method, it should not be surprising that *philosophers of science and logic* have been responsible for much of the attention that has been paid to conceptions of evidence.⁵ But consideration of “the evidence” is traditionally especially important for the practices of history and law, and thus analyses of the concept are also

⁵ See, e.g., Peter Achinstein (ed.), *The Concept of Evidence* (Oxford, 1983); and Achinstein, *The Book of Evidence* (Oxford, 2001).

relatively common in the literatures of *philosophy of history and historiography*,⁶ and *philosophy of law and jurisprudence*.⁷

A separate but related strand of scholarship is that represented by the attempts of theorists and practitioners in several applied fields such as *health care and public policy* to establish a clear and effective link between the findings of scientific research and the everyday practice of working professionals. The mere claim that practice is “evidence-based” seems currently to function as a convenient badge of authority; research centers and scholarly initiatives devoted to “evidence-based *x*” continue to spring up in diverse contexts; and a new journal, *Evidence and Policy*, claims to be “the first [to be] dedicated to comprehensive and critical treatment of the relationship between research evidence and the concerns of policy makers and practitioners.”⁸

Meanwhile, steps are being taken toward the substantiation and recognition of an interdisciplinary “evidence science” or “evidence studies” as a distinct field of inquiry in its own right.⁹ Participants in collaboratory projects include philosophers of science, philosophers of history, statisticians, legal scholars, forensics experts, art historians, and literary theorists, among diverse others. Most recently, the emergence of the notion of “information as evidence” has signaled a renewed interest among *library and information scientists* in the precise nature of the relationship between conceptions of evidence and conceptions of information.¹⁰ The present paper is delivered also as a

⁶ See, e.g., Arthur C. Danto, *Analytical Philosophy of History* (Cambridge, 1965); Carlo Ginzburg, “Clues: Roots of an Evidential Paradigm”, *History Workshop* 9 (Spring 1980): 5–36; Michael Stanford, *The Nature of Historical Knowledge* (Oxford, 1986); and Aviezer Tucker, *Our Knowledge of the Past* (Cambridge, 2004).

⁷ See, e.g., William Twining, *Theories of Evidence: Bentham and Wigmore* (London, 1985); Twining, *Rethinking Evidence: Exploratory Essays* (Oxford, 1990); and John Jackson and Sean Doran, “Evidence”, in Dennis Patterson (ed.), *A Companion to Philosophy of Law and Legal Theory* (Oxford, 1996), pp. 172–183.

⁸ Ken Young, “Announcing a New Journal: *Evidence and Policy: A Journal of Research, Debate and Practice*” (London, 2004), available online at <http://www.evidencenetwork.org/JournalOfResearch.html>.

⁹ See, e.g., James Chandler et al. (eds.), *Questions of Evidence: Proof, Practice, and Persuasion across the Disciplines* (Chicago and London, 1994); Heather Dubrow, “The Status of Evidence”, *PMLA: Publications of the Modern Language Association of America* 111 (January 1996): 7–20; William Twining and Iain Hampshire-Monk (eds.), *Evidence and Inference in History and Law: Interdisciplinary Dialogues* (Evanston, Ill., 2003); Twining, “Evidence as a Multi-disciplinary Subject” (New York, 2003), available online at http://www.ucl.ac.uk/laws/academics/profiles/twining/evidence_multi.pdf; David Schum, “An Integrated Science of Evidence: What Kind of Science Is It?” (London, 2004), available online at <http://128.40.59.163/evidence/content/schum1.pdf>; and Philip Dawid, “Evidence, Inference & Inquiry: Towards an Integrated Science of Evidence” (London, 2005), available online at <http://www.evidencescience.org/>.

¹⁰ See, e.g., Jonathan Furner et al., “Conceptions of Information as Evidence”, in Elaine G. Toms (ed.), *ASIST 2002: Proceedings of the 65th ASIST Annual Meeting* (Medford, N.J., 2002), pp. 497–498; and Anne Gilliland, “Center for Information as Evidence” (Los Angeles, 2004), available online at <http://www.gseis.ucla.edu/cie/>.

contribution to this latter debate; it begins, however, with a brief review of some of the terminology used in discussing related issues in natural science, history, law, and archival science.

The Use of Evidence by Scientists

In the philosophy of science, an account of the nature of evidence is an important component both of theories of induction and of theories of explanation. The problem of *induction* is a celebrated one that has troubled philosophers for centuries.¹¹ Induction is the process of reasoning that is undertaken whenever a conclusion is inferred from a set of premises without being entailed by those premises. In such an argument, the set of premises forms the body of evidence that is said to confirm (i.e., support, warrant, ground, or provide a reason to believe) the conclusion or hypothesis. The philosophical “problem” of induction, as it is typically conceived, consists in providing a convincing, noncircular justification for making inferences of this kind – i.e., an explanation (of why it is rational for us to accept conclusions reached by induction) that does not itself rely on an inductive argument.

Before it can offer such a justification, however, any theory of induction needs to provide a clear and full description of the type of process that it will go on to explain. Description is more difficult than might at first be assumed, since the forms of nondeductive arguments are numerous and various. Norton¹² groups candidate descriptions of induction (sometimes known as models of confirmation) into three families. Models in one family treat induction as a process of *generalization*, whereby we infer from observed evidence that some *As* are *B* to the hypothesis that all *As* are *B*. The evidence *e* is said to confirm the hypothesis *h* as a corollary of its being an instance of *h*. We might consider our observation of a white swan, for example, to be evidence for the hypothesis that all swans are white. Models in a second family treat induction as a *hypothetico-deductive* (H-D) process, whereby we make a conjecture of a hypothesis, make a prediction of an event that is entailed by that hypothesis, and make an observation of the occurrence or nonoccurrence of that event. The event or evidence *e* is said to confirm the hypothesis *h* as a corollary of its being entailed by *h*. For example, we might make

¹¹ See, e.g., Ian Hacking, *An Introduction to Probability and Inductive Logic* (Cambridge, 2001).

¹² John D. Norton, “A Little Survey of Induction”, in Peter Achinstein (ed.), *Scientific Evidence: Philosophical Theories and Applications* (Baltimore, Md., forthcoming).

the conjecture that long-term cigarette smoking causes lung disease. If this hypothesis were true, then we would expect a patient who had been smoking over a long period to have contracted lung disease. This expectation would be the result of logical deduction from the hypothesis. If we then found our expectation to match our observation of a particular patient, then our hypothesis would be confirmed by that evidence. Models in a third family treat induction as a *probabilistic* process, whereby we calculate the effect of observed evidence on our degree of belief in a hypothesis. The evidence e is said to confirm the hypothesis h as a corollary of $p(h|e) > p(h)$, where $p(h)$ represents our degree of belief in h before our observation of e , and $p(h|e)$ represents our degree of belief in h after our observation of e . We might, for example, hypothesize that Edward de Vere was the real author of the dramatic works commonly attributed to Shakespeare. Prior to considering evidence of the stylistic similarities between de Vere's surviving letters and Shakespeare's plays, we might be skeptical; after considering such evidence, our degree of belief might rise considerably, in which case we would say that the evidence confirms the hypothesis – or, at least, confirms it to an extent that corresponds to the increase in the degree to which we now believe it. This focus on degrees of belief allows for the insertion, into probabilistic descriptions of the inductive process, of a subjective element that is conspicuously absent from other approaches.

Models in the H-D family may be distinguished from one another by the different responses they exemplify to the problem of *underdetermination*. A hypothesis is said to be underdetermined in any case in which the observed evidence is entailed by more than one hypothesis. The observation of the smoker with lung disease is consistent not only with the hypothesis that smoking causes lung disease but also (for instance) with the hypothesis that lung disease somehow engenders a craving for cigarettes. Since it would seem that, in fact, every case is of this kind, any model of confirmation must show how we select from among competing hypotheses. One variant on the basic H-D model is that of *abduction*, or *inference to the best explanation* (IBE), which treats induction as a process of coming to identify the hypothesis that serves as the “best” (i.e., simplest, most coherent, most useful, most elegant ...) explanation for the observed evidence.¹³ A related subclass of variants includes *reliabilist* accounts that propose, as a criterion for hypothesis selection, the degree of past

¹³ See, e.g., Peter Lipton, *Inference to the Best Explanation* (London and New York, 2nd edn., 2004).

reliability of the methods by which individual hypotheses are reached. If, after examining past performance, we were to find that, given a choice between the explanation that posits the existence of the fewest new or unobserved classes of object and the explanation that covers the largest number of cases, selection of the explanation of the former kind appears to reflect reality more frequently, then on the reliabilist account we would be justified in using that method of deciding among competing hypotheses. Of course, that smoking causes lung disease is widely considered among health professionals as the “best” explanation of the unhealthy condition of many smokers: it may be no coincidence that it is also the simplest.

If it is to be persuasive, any model of IBE needs also to provide an account of the process of *explanation* itself; typically, in this context, a *causal* account of explanation is given that equates explanation with specification of a historical sequence of cause and effect. Such an account serves as an alternative to the well-known *deductive-nomological* (D-N) model, whereby to explain any given event is to deduce it from a “covering law” or generalization.¹⁴ According to the D-N model, explaining the incidence of lung disease in a smoker is a matter of stating the “law” that long-term smoking is always accompanied or followed by lung disease, and then deducing the facts of the particular case from that law. The D-N model has been criticized for its inadequacy on several fronts, not least for its underdetermination of the class of acceptable explanations for any given event. The particular “law” stated above, much like the proposition that all swans are white, is not empirically true, of course; yet it is another feature of the D-N model that any putative law can be modified by adding exception clauses (such as “... except in cases where patients have condition *x*”) as necessary to cover all cases that arise. It is notable that historiographers and philosophers of social science who have considered the D-N model as it has been developed by their colleagues in philosophy of natural science have widely rejected it in favour of accounts of explanation that do not require deterministic covering laws to be specified for human behavior, but that allow for the effects of human intentionality, individuality, and the exercise of free will, and that require the explainer to engage in imaginative interpretation of the meanings events have for human actors.¹⁵

¹⁴ See, e.g., Carl G. Hempel, *Aspects of Scientific Explanation and Other Essays in the Philosophy of Science* (New York, 1965).

¹⁵ See, e.g., William H. Dray, *Philosophy of History* (Englewood Cliffs, N. J., 1964).

The Use of Evidence by Lawyers

In a legal context, evidence is information that is presented to a judge or jury at a trial in order to prove or disprove a given *fact* – that is, in order to convince the judge/jury of the truth or falsity of that fact.¹⁶

The oral reports of events made by eye-witnesses while under oath to tell the truth are normally construed as constituting *direct* evidence, in the sense that (given certain assumptions about the authenticity, reliability and accuracy of the witness) judge or jury need make no further inference from the content of such testimony in order to learn the facts of the case. Testimony may be presented in documentary rather than oral form; the category of *documentary* evidence can include images (photographs, drawings, videos, etc.) and recordings of speech as well as written texts.

Circumstantial evidence is evidence of circumstances from which a judge/jury may reasonably infer a fact that cannot be proven directly. For instance, a fingerprint left at the scene of a crime could be treated as circumstantial evidence for the past (unwitnessed) presence at the scene of a person known to be capable of leaving the print in question. Circumstantial evidence is often presented in physical form; the category of *real* evidence includes artifacts and natural objects (e.g., items on which fingerprints or footprints are left, or that are damaged or tampered with) whose significance lies in their bearing traces of human activity of a nonverbal and nongraphical (i.e., non-documentary) nature.

So that the right of an individual to a fair trial is protected, only evidence of certain kinds is allowed or *admissible* in a trial. Hearsay (i.e., secondhand testimony), and evidence obtained by illegal search, for example, are typically deemed inadmissible. Rules of evidence specify how admissible evidence is to be distinguished from inadmissible. In the United States, federal courts follow the *Federal Rules of Evidence*; state courts have developed their own sets of rules.

Modern understanding of the different types of evidence used in civil and criminal justice, and the different methods to be used in obtaining and interpreting evidence, relies to a great extent on the continuing influence of two seminal works: Bentham's¹⁷ *Rationale of*

¹⁶ See, e.g., Christopher B. Mueller and Laird C. Kirkpatrick, *Evidence under the Rules: Text, Cases, and Problems* (New York, 1996).

¹⁷ Jeremy Bentham (1748–1832), British philosopher, economist, and jurist.

Judicial Evidence (1827)¹⁸ and Wigmore's¹⁹ *Science of Judicial Proof* (1937).²⁰ Twining²¹ and Shapiro²² trace the history of the development of legal notions of evidence; Binder & Bergman²³ and Anderson and Twining²⁴ provide accounts of the process of establishing legal proof; Tillers and Green²⁵ and Schum²⁶ use the framework provided by Bayesian probability theory to model this process.

The Use of Evidence by Historians

The concept of evidence as used in archival science is one that is closely related to that used by historians. In this respect, it should be noted that conceptual analysis of the kind that was characteristic of twentieth-century analytical philosophy is hardly in vogue in contemporary historiography. Questions like "What is historical knowledge?" and "What is historical explanation?"²⁷ now seem to belong to a different age – not least, of course, because much work in the philosophy of history over the last 40 years has led many to doubt that historical inquiry can produce anything that may appropriately be conceptualized as objective knowledge or explanation.²⁸ Archival theorists of a postmodernist bent might understandably be suspicious of any mode of inquiry that appears to seek fundamental essences or absolute truths. Given the direction of recent trends in archival theory,²⁹ it

¹⁸ Jeremy Bentham, *Rationale of Judicial Evidence, Specially Applied to English Practice*, 5 vols. (ed. John Stuart Mill, London, 1827).

¹⁹ John Henry Wigmore (1863–1943), American legal scholar.

²⁰ John Henry Wigmore, *The Science of Judicial Proof* (3rd edn. of *The Principles of Judicial Proof as given by Logic, Psychology and General Experience and Illustrated in Judicial Trials*, Boston, 1937).

²¹ Twining, *Theories of Evidence*, already cited.

²² Barbara J. Shapiro, "Beyond Reasonable Doubt" and "Probable Cause": *Historical Perspectives on the Anglo-American Law of Evidence* (Berkeley, California, 1991).

²³ David A. Binder and Paul B. Bergman, *Fact Investigation: From Hypothesis to Proof* (St. Paul, Minn., 1984).

²⁴ Terence Anderson and William Twining, *Analysis of Evidence: How to Do Things with Facts Based on Wigmore's Science of Judicial Proof* (Boston and Toronto, 1991).

²⁵ Peter Tillers and Eric D. Green (eds.), *Probability and Inference in the Law of Evidence: The Uses and Limits of Bayesianism* (Boston and Dordrecht, 1988).

²⁶ David A. Schum, *The Evidential Foundations of Probabilistic Reasoning* (New York, 1994).

²⁷ Questions of this kind are central for, e.g., W. H. Walsh, *An Introduction to Philosophy of History* (3rd edn., London, 1967); and Michael Stanford, *An Introduction to the Philosophy of History* (Malden, Mass., and Oxford, 1998).

²⁸ See, e.g., C. Behan McCullagh, *The Truth of History* (London and New York, 1998); and Alun Munslow, *The New History* (Harlow, England, 2003).

²⁹ See, e.g., Terry Cook, "Archival Science and Postmodernism: New Formulations for Old Concepts", *Archival Science* 1(1) (2001): 3–24; and Eric Ketelaar, "Tacit Narratives: The Meanings of Archives", *Archival Science* 1(2) (2001): 131–141.

might be appropriate to provide a brief, preemptive defense of my decision to focus on a technique that seems to so carefully avoid confronting some of those issues – issues to do with, for example, the very possibility of objectivity, of a distinction between fact and value, or of one between language, thought, and reality – that (as recent work in historical studies has taught us) are among the most important for scholars in all fields. The following is presented in that vein.

To summarize: It is sometimes thought possible to distinguish, at the grossest of levels, between those historians whose philosophy, once rendered explicit, might be characterized as “positivist,” and those whose approach is classifiable as “postmodernist.” The generality of these simplistic labels, and the tendency for each of them to be used pejoratively, militate against their utility. What can nevertheless be productive is to identify some of the more important epistemological assumptions that, when considered collectively, could plausibly be used as the basis on which these generic labels are assigned.

A stereotypically positivist approach to historical inquiry rests on assumptions of the following kinds:

- There is an external reality that exists independently of human thought.
- The past is a component of reality consisting of a series of events that have already occurred at particular times and in particular places.
- There is a single objective description or representation of reality (and, thus, the past) consisting of a set of statements – the facts – that are true.
- The truth of an individual statement is the degree to which it corresponds to reality.
- It is possible to have knowledge about reality – i.e., to make statements about reality that can independently be shown to be true (or, at least, to resist falsification).
- The only method by which reality may be known is the scientific method of inductively testing hypothetical generalizations (deterministic or probabilistic) against empirical observation of individual events – the evidence.
- Scientists (including historians) are neutral observers and gatherers of true, objective descriptions of events.
- The occurrence of future events can be explained (i.e., predicted) – and past events similarly retrodicted – by identifying initial conditions and hypothetical generalizations that serve as

premises from which the occurrence of particular events can be deduced.

- The practice of history is analogous in this respect to that of natural science.

In contrast, a stereotypically postmodernist approach might run as follows:

- There is no external reality that exists independently of human thought. What is called “reality” is a construction of human thought.
- There is no single description or representation of reality that is true. What is called “the facts” at any given point is that set of statements endorsed by the group of people most well equipped to impose their values over others.
- There is no such property as truth. An evaluation of a statement as true by any given person indicates only that person’s positive attitude toward it.
- It is not possible to have knowledge about reality (past, present, or future).

Of course, between the extremes represented by these two incommensurable caricatures lies a wide and diverse range of alternative perspectives. One group of relatively common “third ways” consists of those that accept the reality of an external world, but that insist on the impossibility of our ever knowing that reality “as it is in itself,” since we are all necessarily trapped within our own perspective. Far from acting as an encumbrance, however, it is this apparent limitation that makes the practice of history possible; for, if historians were really the neutral observers of an objective truth that the positivist paradigm requires, they would be unable to evaluate the relative significance of past events, or to make selections from sources of potential evidence, or to interpret the thoughts, feelings, and intentions of human agents. On this basis:

- The truth of an individual statement is the degree to which it is perceived to cohere with other true statements.
- It is possible to obtain an understanding of the past through the hermeneutic method of interpreting people’s thoughts, feelings, and intentions.
- The practice of history is analogous in this respect to writing fiction, and its products – narratives – are products of the historian’s imagination.

As Fay³⁰ points out, the pendulum of scholarly thinking has oscillated from the “Scientific” (or positivist) to the “Rhetorical” (or postmodernist) attitude many times in the last five hundred years, and there is no particular reason to think that the contemporary manifestation of the “linguistic turn” in philosophy of history (as represented by the content of, for example, *History and Theory* since that journal’s inception in 1960) will be the last such swing. Moreover, and more immediately, it is important to recognize that, notwithstanding the insights supplied by the “Rhetorical” attitude – viz., most significantly, recognition of the necessarily subjective nature of any historian’s perception of reality, selection of evidence, and representation of the facts – many practicing historians continue to work as if their goal is to get closer to *a* (if not *the*) truth, and to persuade their peers not only of the validity of their arguments but also of the truth of their conclusions. Successful persuasion is often the result of the application of skills such as the ability to empathize with historical actors or to construct a powerful narrative; but equally as often (and typically simultaneously) such success is reliant on the historian’s demonstration that conclusions are justified by means of appeals to (what is taken to be) the evidence, and revised in the light of new evidence. So long as historians’ products continue to be evaluated in this manner, it would seem to be appropriate to continue to seek clarification as to the ways in which evidence is (or could be) conceptualized in contexts of this kind.

The Use of Evidence by Archivists

Both historians and lawyers are interested in evidence primarily for the light that it may throw on events that occurred (or situations that existed) in the past. As those responsible for the selection, organization, and preservation of artifacts of various kinds whose existence or content may be construed as (or as yielding) evidence of past events, *archivists and archival scientists* have also been concerned to clarify understanding of the concept.³¹

³⁰ Brian Fay, “The Linguistic Turn and Beyond in Contemporary Theory of History”, in Fay et al. (eds.), *History and Theory: Contemporary Readings* (Malden, Mass., and Oxford, 1998), pp. 1–12.

³¹ See, e.g., Heather MacNeil, *Trusting Records: Legal, Historical, and Diplomatic Perspectives* (Dordrecht and Boston, 2000); and Brien Brothman, “Afterglow: Conceptions of Record and Evidence in Archival Discourse”, *Archival Science* 2(3/4) (2002): 311–342.

Twentieth-century thought on the nature of archival evidence demonstrates the distinctive influence of the two doyens of modern archival practice, the Briton Hilary Jenkinson (1882–1961), and the American Theodore R. Schellenberg (1903–1970).³² Jenkinson popularized the idea that evidentiarianness is the essence of archival records, and insisted on the universal, objective strength of the link between premise (the existence of the record) and conclusion (the occurrence of the events that produced the record); Schellenberg articulated a much-repeated distinction between the evidential and the informational value of a record that continues to inform contemporary archival theory and education. For Schellenberg, a record's evidential value is an index of its utility in documenting the circumstances of its creation, whereas its informational value reflects the importance of its symbolic content. The possibility of confusion is thus introduced by Schellenberg's use of the term "evidential" to refer only to evidence of a real (rather than documentary) kind. In historical scholarship and in the law, Schellenberg's distinction is an important one, but it is one that is drawn between different kinds of evidence (i.e., between real evidence-as-trace and documentary evidence-as-testimony) rather than between evidential and non-evidential values.

It is well appreciated that Jenkinson's views on the essential objectivity and truthfulness of the archives as a record of "what really happened" in the past reflects the positivist, Rankean historiography that was dominant in his time.³³ For Jenkinson, appraisal of records' long-term value was a task that should be undertaken only by records creators, and that should involve consideration only of the functions of records as originally intended. Schellenberg's supporters argued, in contrast, that appraisal decisions should take into account any expectations as to the future use of records for purposes other than those for which they were created, and that archivists rather than records creators should bear responsibility for decisions of that kind.

In the late twentieth century, and primarily in Australia and Canada, a neo-Jenkinsonian perspective on archival best-practice emerged that retained Schellenberg's emphasis on appraisal, but that restored to primacy Jenkinson's principle that selection decisions are to be based on evaluations of the strength of the relationships between

³² See, e.g., Terry Cook, "What Is Past Is Prologue: A History of Archival Ideas Since 1898, and the Future Paradigm Shift", *Archivaria* 43 (Spring 1997).

³³ Leopold von Ranke (1795–1886), German historian renowned for his dictum that history should be recorded "wie es eigentlich gewesen."

records and the contexts in which they were originally created. The scope of a record's contextuality is now more broadly defined than Jenkinson allowed. In Canada, Hugh Taylor and Terry Cook are among those who have promoted a new focus on the "macro," societal contexts that give records their meaning.³⁴ One result of this trend is for the primary role of the archivist to now be more commonly perceived as one of determining the provenance of records as a means of understanding the social structures and processes by whose complex combination records are generated. In Australia, Sue McKemish and Frank Upward have been concerned to emphasize the importance of archives as the primary means by which societies maintain the accountability of their institutions.³⁵ In this sense, the process by which records of demonstrable authenticity provide evidence of public and private institutions' actions is an essential component of any functioning democracy.

More recently, McKemish and her colleagues have begun more explicitly to explore the similarities and differences between corporate recordkeeping, where records are captured as evidence of business functions and activities, and personal recordkeeping, where records are captured as evidence of the roles and activities of individuals.³⁶ Just as archivists have long appreciated the importance of establishing recordkeeping and preservation systems that can capture, manage and maintain complete and accurate records of business activities for business purposes, McKemish is concerned to emphasize the active role of archivists in institutionalizing personal recordkeeping systems as a means of preserving the collective memory (and thus the identity) of societies and cultures. No redefinition of "record" is required or implied in this work: the recordness of a document such as a personal letter is still conceived as consisting in its transactional origin (as the product of some human interactivity), and its evidential potential (as the object of a recordkeeping process that maintains the document's links to the context in which it was generated); and the functional requirements of any recordkeeping system are still conceived as including the means to guarantee the authenticity and reliability of documents captured as evidence.

³⁴ See, e.g., Tom Nesmith, "Hugh Taylor's Contextual Idea for Archives and the Foundation of Graduate Education in Archival Studies", in Barbara L. Craig (ed.), *The Archival Imagination: Essays in Honour of Hugh A. Taylor* (Ottawa, 1992), pp. 13-37; and Terry Cook, "Mind Over Matter: Towards a New Theory of Archival Appraisal", in Craig (ed.), *The Archival Imagination*, pp. 38-70.

³⁵ See, e.g., Sue McKemish and Frank Upward (eds.), *Archival Documents: Providing Accountability Through Recordkeeping* (Melbourne, 1993).

³⁶ See, e.g., Sue McKemish, "Evidence of Me ...", *Archives and Manuscripts* 24(1) (1996): 28-45.

General Characteristics of Evidence

From the foregoing, it may be determined that “evidence” may be generally and loosely defined as *that which we consider or interpret in order to draw or infer a conclusion* about some aspect of the world.³⁷ Correspondingly, something may be identified as being *evidential* or *evidentiary* if it has been (or may potentially be) considered or interpreted with the purpose of drawing a conclusion. As a hypothetical case – one to which we shall return several times in the course of this paper – we might talk of the “evidence” supplied by a physical artifact, perhaps one recently found in an archaeological dig, for any statement that we may wish to make about the cultural context in which that artifact was produced. Such an artifact would be deemed to be “evidentiary” simply in virtue of its playing the particular kind of role that we have decided it is to play in our argument. Suppose that the artifact in question has the appearance of a stone vase and that its outer surface is inscribed with a sequence of symbols. If, following an examination of the artifact, we were to draw conclusions – conclusions about the artifact, about its functions and/or meanings, about the contexts in which it was created, about the classes of objects of which it is a member – it might seem perfectly reasonable for us to refer to the artifact itself as “the evidence,” that is, the object of interpretation that prompted us to make our inferences. However, this usage of the term reflects just one of various senses in which the concept of evidence may usefully be employed in this context.

As a point of entry to a more detailed examination of the structure of cases such as that outlined above, I would like to make a number of preliminary observations about the concept of evidence by considering the various ways in which the term is used in ordinary discourse.

Evidence is relational

We commonly speak of things as being evidence *of or for* other things. On this basis, we may wish to define *evidentiality* or

³⁷ The English noun “evidence,” like its equivalents in French (*évidence*), Italian (*evidenza*), and Spanish (*evidencia*), derives from the Latin combination of the prefix *e-* meaning “out” and the verb *videre* meaning “to see.” The compound verb *evidere*, literally “to see out,” means “to look” in the sense of “to appear to be [well, tired, happy, etc.]” To be evident is to be visible, obvious, or certain. According to the *Oxford English Dictionary*, the two primary meanings of “evidence” in English are (1) the quality, condition, or state of being evident, and (2) that which manifests or makes evident. The latter is the sense with which we are concerned in this paper. Two sub-senses of this second sense are (a) a sign from which inferences may be drawn, and (b) a ground for belief. The distinction between these two sub-senses is dealt with at a later point in the paper.

evidentiarieness as that type of relationship that is conceived as linking x and y , when x is treated as evidence for y . Sometimes, and potentially confusingly, the word “evidence” is itself used instead of “evidentiality” to refer to the relationship (or type of relationship) between x and y , rather than (or as well as) to refer to x itself.

What is it possible for x and y to be? Are they instances of the same kind of thing, or of different kinds? In the general definition of evidence given above, we indicated that y could be conceived as a conclusion, somehow to be inferred. In order to clarify this general conception of evidence-based reasoning, it is first necessary to explain what is meant here by the terms “infer” and “conclusion.” And to do even that, it is necessary to bring to the surface two important assumptions that are often made only implicitly in discussions of this kind – one about the essential duality of the physical and mental worlds (or of reality and representation), and another about the difference between *particular* mental entities and *classes* of mental entities.

A common assumption that guides much of our practical activity in the world is that it is possible to distinguish between, on the one hand, the real *situations* that we encounter and the real *events* that we experience in the physical world, and, on the other, any ideas, beliefs, or *thoughts* we might have about those situations and events.³⁸ Furthermore, it would seem useful to identify a distinction between the particular thought-tokens that make up each of our own personal mental states, and the thought-types that are instantiated by those tokens. Your thought that the battle of Hastings was fought in 1066 and my thought that it was fought in that year are two separate instances of the same thought-type. A convenient way of expressing this latter distinction is to refer to thought-tokens simply as thoughts, and to thought-types as *propositions*.

An inference – an argument or process of reasoning – is made up of a series of propositions. The final proposition to which the argument leads is known as the *conclusion*; the propositions that are analyzed in the lead-up to the conclusion, and from which the conclusion derives, are known as the *premises*.³⁹ A conclusion, in other words, is an idea or proposition about the world that is the product of a process of inferential analysis.

³⁸ The existence of a distinction between “reality” and any representation of reality is denied by the rigorous postmodernist, who would treat all entities as thoughts (in the sense used here).

³⁹ In a legal context, the conclusion might be referred to as “the point in question;” in history, as “the facts;” and in science, as a hypothesis.

How are conclusions derived from premises? What methods are used in the inferential analysis of premises? We may distinguish broadly between two kinds of inferential method: deduction and induction. A simple example of a *deductive* inference is provided by the following argument, represented in three systems of notation. In this example and the next one, the proposition listed below the line is the conclusion; the propositions listed above the line are the premises.

P1	If X_i is a vase made of stone, then X_i was made in Ireland. (Or, Everything that is a vase made of stone was made in Ireland; or, All vases that are made of stone were made in Ireland.)	If X_i is a , then X_i is b . $p \rightarrow q$.
P2	Vase 1 (the artifact in question) is a vase made of stone.	X_1 is a . p .

C1	\therefore Vase 1 was made in Ireland.	$\therefore X_1$ is b . $\therefore q$.
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If we can demonstrate the truth of the premises here, we thereby demonstrate the truth of the conclusion. Note, however, that an evaluation of the validity of the deduction does not depend on an evaluation of the truth of either of the premises, but is rather an evaluation of the form of the argument. The general form instantiated here is known in the propositional calculus as *modus ponens*. The expression $p \rightarrow q$ is called a conditional, in which p is the antecedent and q the consequent. If $p \rightarrow q$ is true, then p is a sufficient condition for q : we would need only to know that the artifact in question is a stone vase for us to safely conclude that it was made in Ireland. Moreover, if $p \rightarrow q$ is true, then q is a necessary condition for p : we would need only to know that the artifact in question was not made in Ireland for us to safely conclude that it is not a stone vase.

P1	Vase 2 is made of stone and was made in Ireland.	X_2 is a and X_2 is b . $p \wedge q$.
P2	Vase 3 is made of stone and was made in Ireland.	X_3 is a and X_3 is b . $p \wedge q$.
Pn	...Vase n is made of stone and was made in Ireland.	... X_n is a and X_n is b . $\dots p \wedge q$.

C1	\therefore If X_i is a vase made of stone, then X_i was made in Ireland.	\therefore If X_i is a , then X_i is b . $\therefore p \rightarrow q$.
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An example of an *inductive* inference, represented in the same three systems of notation, may be given as above. Clearly, our observation of only one counter-example (of a vase that is made of stone but not made in Ireland) would be sufficient for us to be 100% certain of the falsity of the conclusion as stated here. But we can never be 100% certain of its truth, since the inference is not a matter of simple deduction, but rests on the additional assumption that the non-occurrence of counter-examples in the past is a reliable indicator of their non-occurrence in the future.

Evidence is probabilistic

The weight of evidence may be measured

In practice, many arguments take a *probabilistic* form of a kind that merges inductive and deductive inference as in the following example:

P1	Vase 2 is made of stone and was made in Ireland.
P2	Vase 3 is made of stone and was made in Ireland.
P _n	...Vase <i>n</i> is made of stone and was made in Ireland.
C1/P3	∴ If Vase <i>i</i> is a vase made of stone, then <i>it is likely that</i> Vase <i>i</i> was made in Ireland.
P4	Vase 1 is made of stone.
C2	<i>It is likely that</i> Vase 1 was made in Ireland.

It is common in this context to speak of the *weight* of evidence supporting a given conclusion. The assumptions made are (i) that the relative frequency of occurrence of past events in similar circumstances can reasonably serve as a predictor of the likelihood with which such events will occur in the future, and (ii) that the amount, extent, or degree of support or warrant that a piece of evidence supplies for the assertion of or belief in a given conclusion may be weighed, measured, or quantified by calculating relative frequencies or probabilities of that kind.

The relevance of evidence may be measured

The use of the phrase “in similar circumstances” in the previous paragraph is highly significant. The exact position of the threshold level of similarity that pairs of contexts must exceed for them to be considered *relevantly related* in this sense is a matter of subjective opinion that nevertheless has great bearing on the relevance of certain pieces of evidence. Suppose, for example, we come across another vase that

is made of stone but that we determine was not made in Ireland. Would we thenceforth treat that vase as evidence *against* drawing conclusion C2? Not necessarily – not if it becomes clear that there is something different about that vase or about the context in which it was produced that we decide should prevent it from being considered as a member of the class of relevantly related vases or contexts. We might recognize, perhaps, that the new vase, whilst made of stone, is made of a slightly different kind of stone from all the others – in which case, rather than taking its existence into account as evidence for rejecting our original conclusion about Vase 1, we might be led simply to revise our premises in a way that denies its relevance.

Evidence can be mental (or “ideal”); evidence can be physical (or “real”)

All the components of the inferences illustrated so far may be categorized as *mental* entities. They are ideas *about* situations in the physical world; they are not those situations themselves. It is important to bear this in mind when evaluating any taxonomy of kinds of evidence. Just as we often speak of mental entities – things that exist in our minds, such as ideas, thoughts, and beliefs, and classes of such entities, such as propositions – as being evidence, we also often speak of events, objects, or situations in the *physical* world external to our individual minds as being evidence (or sources of evidence). Sometimes the word “evidence” is used to cover entities of both kinds; sometimes it is used more narrowly to include entities of only one specific kind. For example: Rather than talking of the proposition *p*, that our vase is made of stone, as evidence, we might wish instead to talk of the vase itself (or, perhaps, its having the property of being made of stone) as evidence.

Evidence can be substantive; evidence can be attributable

So, it should also be clear that not only do we commonly speak of things as *being* evidence, we also speak of things – sometimes the same things or kinds of things – as being *sources* of evidence, as containing, providing, or supplying evidence, or simply as *having* evidence. In talking about our hypothetical case, we might plausibly decide that it is somehow more precise to treat the vase as a source of evidence, rather than to treat it as evidence itself. The vase as source, and the evidence supplied, are thereby kept conceptually distinct. In such a case, it is typically possible to distinguish between the *mental*

evidence on the one hand, and the *physical* sources of that evidence on the other. We might, for instance, talk of our vase as being the physical source of an idea that we have about the context in which it was produced. In recognition of this distinction, we should be prepared also to acknowledge that the word “evidence” may sometimes be used loosely to denote a source or sources, rather than to refer to that which we might more properly conceive as the evidence itself. What is more common is the description of sources as “evidentiary,” i.e., as supplying evidence.

Evidence can be form; evidence can be content

Some events and objects in the real world may be identified as human *artifacts* in that they are generated as a result of human activity. Some of these artifacts may be treated as *documents* in virtue of their having (symbolic) *content* as well as (physical) *form*. Sometimes such documents are treated as evidence (or sources of evidence) in virtue of their form; sometimes documents are treated as evidence in virtue of their content. In this sense, content is conceived as anything that serves as the physical expression or representation of human ideas or thoughts. The relationship of content to thought is that of *meaning*. In any given case, this relationship is complex, not least because any instance of content (i.e., an utterance) may have multiple potentially-associated thoughts, including at least (i) a meaning intended by the speaker or writer, (ii) a conventional meaning emergent from prior usage, and (iii) a meaning assigned by the hearer or reader, none of which may coincide.

It should be clear, for example, that vases of the kind observed in our hypothetical case can be treated as sources of evidence in virtue of their form. We have already seen how an argument may be constructed in which the known origins of previously-examined vases are used as evidence in support of a conclusion about the origins of a newly-discovered vase. This kind of argument, in which propositions about the form of other vases are marshaled as evidence in support of an answer to a question about the context in which the vase in question was produced, is (as we shall see) just one of the kinds of inference in which evidence-of-form may play a part. Another is that in which the very existence of an artifact is invoked as evidence of the occurrence of the act that produced it.

But our vase and others like it can also be treated as sources of evidence in virtue of their content. The series of symbols inscribed on Vase 1’s outer surface comprise an utterance, or speech act, carried

out by an author or inscriber. Such an utterance expresses a thought or particular idea of the author's (its intentional meaning), and may also be assigned meaning by individual readers or through inter-subjective consensus or convention. Documents – i.e., artifacts that, like our vase, have symbolic content – supply evidence not just of the occurrence of the acts that produced them, but of the occurrence of the acts that they document. Suppose that, on interpreting the inscription on our vase, we were to discover a story about an ancient battle. Not only would we then have evidence of the occurrence of the speech act of which this document is a result, but we would have evidence of the occurrence of the battle described. The need to evaluate both the authenticity of the document and the reliability of the author if we are to quantify the weight of the evidence in support of these conclusions is discussed in a separate section below.

Evidence can be attitudinal; evidence can be propositional

In taxonomies of mental entities, a distinction is commonly made between *propositions*, which have *truth-value* or *epistemic status*, and *beliefs*, which may be treated as personal *evaluations* of the correspondence to reality of given propositions, or as preferential *attitudes* to those propositions. Thus, the general proposition that the vase in our example is red in color is distinguishable from my personal belief that that proposition is true. Similarly, on this reading, the general proposition that our vase was produced in Ireland may be distinguished from the particular belief that any individual may have that the vase was, in reality, produced in Ireland. Beliefs (along with proposition-targeted thoughts or attitudes of other kinds such as hopes, intentions, etc.) may be viewed as individual instances of propositions that may themselves be viewed as thought-types or thought-classes.

A Taxonomy of Kinds of Evidentiarieness

Where does the preceding discussion of the general characteristics of evidence get us? Is it possible to establish a taxonomy of kinds of evidentiarieness that further clarifies our understanding of what it is to be evidentiary? The following is presented as an effort to impose some conceptual order on the matter. In this taxonomy, two general

categories of evidentiarieness are identified: evidentiarieness as a property of sources; and evidentiarieness as a property of ideas.⁴⁰

Evidentiarieness as a property of sources

*Evidentiarieness as a property of situations and events,
or of their attributes*

We might say that a situation, made up of a set of physical objects and their relationships, or an event, a change in an existing situation, is what is evidentiary. In our hypothetical case described above, it is the vase itself that on this reading would be identified as having evidentiarieness. Alternatively, but relatedly, we might argue that it is the various individual properties, attributes, or characteristics of the vase – for example, its existing, or its being made of stone – that should be treated as having evidentiarieness.

Evidentiarieness as a property of utterances

Our inscribed stone vase is not simply an artifact. It is a documentary artifact, or *document*, in virtue of its having a symbolic component. The series of symbols inscribed on its surface comprise an utterance, or speech act, carried out by the author or inscriber. We may reasonably decide to treat the utterance itself – the sequence of physical symbols to which meaning may be assigned – as that-which-is-evidentiary.

Evidentiarieness as a property of ideas

Evidentiarieness as a property of ideas about form

Instead of identifying evidentiarieness as a property either of physical things or of attributes of physical things, we might wish to say that propositions or ideas about particular situations, events, or their formal attributes – for example, the idea that the vase exists, or the idea that the vase is made of stone – are what are evidentiary. Such ideas may be derived from our direct observation or experience of the situation or event in question.

Evidentiarieness as a property of ideas about content

Alternatively, we might wish to consider as evidentiary the propositions or ideas about particular situations, events, or their attributes that may be assigned to the utterances or symbolic components of

⁴⁰ In the *Oxford English Dictionary*, among the listed senses of both “evidentiary” and “evidential” are these: “furnishing [i.e., supplying] evidence,” and “having the nature of [i.e., being] evidence.” The former corresponds to the sense in which evidentiarieness is a property of sources, the latter to that in which evidentiarieness is a property of ideas.

documents. Thus, we would treat the meaning(s) that we assign to the inscription on the outer surface of the vase as that-which-is-evidentiary.

It is possible to invoke any of these senses in amplification of the broad definition that was introduced earlier, of evidence as that which we consider or interpret in order to infer a conclusion. Although care was taken above to define both deduction and induction as inferential processes that begin and end with propositions, it should be clear that situations, events, attributes, and utterances may be (and routinely are) treated as evidence – or, perhaps more precisely, as the primary sources from which evidence in the form of propositions may be derived.⁴¹

Evidentiarieness as a Matter of Degree

The usefulness of such a taxonomy is perhaps compromised, however, by its ignoring the most essential aspect of evidence, which is its usage by people in argumentation.

The general definition of evidence given earlier is in one significant sense a simplification that serves to hide an important level of complexity. Such complexity is a result of the participation of *people* in the inference process – people whose prerogative it is to decide, in any given case, whether or not to infer a particular conclusion. Like all propositions, conclusions are the objects of personal evaluation; they are subject to belief or disbelief. It can be useful, therefore, to view evidence more formally as that which serves as (or that which provides) grounds for a person's belief in the truth of a target proposition or conclusion. We might wish to say, for instance, that a proposition *p* is evidence for *q* if it is grounds (i.e., reason, cause, warrant) for believing *q*. Alternatively, we might prefer to assert that a belief in (the truth of) *p* is evidence for *q* if it warrants belief in (the truth of) *q*. Of course, unless we are careful to describe the nature of the kinds of grounds for belief that are meant here, this definition will remain unhelpfully tautologous: we are simply substituting “grounds for belief” for “evidence.” Adopting a pragmatic perspective, we may recognize that *p* is grounds for belief in *q*, if a rational person's

⁴¹ The act of inferential analysis, carried out with a view to deriving conclusions from premises, should perhaps be conceived as distinct from the act of *interpretation* that is undertaken in order to derive premises from primary sources. Nevertheless, it should also be clear that the results of inductive inference are also strongly dependent on individuals' personal interpretations of the concepts and categories that are manipulated in argument.

believing p increases the probability that that person will believe in q . Moreover, we may recognize that the degree to which p is grounds for belief in (or is evidence for) q varies with the extent to which a rational person's believing p increases the probability that that person will believe in q . Evidentiarieness, in this sense, is not a binary property, but one whose values vary continuously. It is more useful to view evidentiarieness as a matter of degree, where it is possible to quantify or evaluate the extent to which one proposition (or belief in that proposition) warrants belief in another.

Noting the distinction drawn at a separate earlier point between beliefs (attitudinal thought-instances) and propositions (thought-types), we may now distinguish additionally between a "strong" and a "weak" reading of evidence as grounds for belief that cut across the sub-categories of "Evidentiarieness as a property of ideas" identified above. Before we can discuss these readings, however, it is first necessary to clarify what is meant by another term. "Rationality" (or sometimes "reasonableness") is the common label for a quality that is often attributed to an evaluator or judge who makes epistemic decisions – decisions about the truth-value or epistemic status of propositions that translate into attitudes towards those propositions – on the basis of what the evaluator judges to be sound or valid arguments made up of true premises. In legal contexts, an assumption is typically made that it is possible to estimate the probability that a rational person will evaluate some specified target proposition or conclusion as true, by considering the degree to which their attitudes to the premises and supporting argument are positive.

On a "strong" reading of evidence as warrant for belief, then, something is called "warrant" if it actually (not only potentially) increases the probability that a rational person will evaluate some specified target proposition as correspondent to reality or as having some preferred epistemic status. The things that may serve as warrant in this sense are not certain other propositions, but particular beliefs in (positive evaluations of, preferential attitudes toward) certain other propositions as *true*, and beliefs in (positive evaluations of, preferential attitudes toward) certain arguments as *valid*. In this sense, the warrant for a belief in a proposition is made up of other beliefs.

On a "weak" reading, something is called "warrant" if it is a proposition, belief in which would potentially increase the probability that a rational person will believe in another proposition. In this sense, the warrant for a belief in a proposition is made up of other propositions.

A Taxonomy of Kinds of Inference

Having considered the kinds of thing that evidence can be, I shall now turn to a presentation of a taxonomy of the kinds of conclusion that may be drawn as a result of the interpretation of a primary source. What kinds of conclusion or inferences may we potentially draw (or wish to draw) from our analysis of any evidential premises that may be derived from a primary source such as our inscribed vase, beyond simple reports of our perception of its existence and physical attributes? To answer this question, first it should be recognized that the premises that we derive from the vase itself are far from the only premises that may be used in deriving a conclusion about the vase. We have access, of course, to whatever set of propositions (and whatever set of evaluations of the truth of those propositions) that have been amassed from previous interpretations of objects similar (in various ways) to the vase under current examination.

1. Inferences to *context*

- Deductive inferences to *particular* context – about the circumstances and/or conditions of this particular object's creation, including (specifically) the identity and nature of its creator(s). For example, we might know from prior interpretation of the available evidence that vases made of a particular kind of stone were made in Ireland (Premise 1: $p \rightarrow q$); observe that our vase is made of that kind of stone (Premise 2: p); and deduce that our vase was made in Ireland (Conclusion: q).
- Inductive inferences to *general* context – about the circumstances and/or conditions of the creation of other members of any class of which this particular object is understood to be a member, including (specifically) the identity and nature of their creator(s). For example, we might know that another vase was made of the same kind of stone and that that vase was made in Ireland (Premise 1: $p \wedge q$); observe that our vase was made of that kind of stone and know from prior interpretation of the available evidence that it was made in Ireland (Premise 2: $p \wedge q$); and infer by induction that vases made of that kind of stone were made in Ireland (Conclusion: $p \rightarrow q$).

2. Inferences to *function*

- Inferences to *intentional* function
 - Deductive inferences to *particular* intentional function – about the functions or uses to which the creator(s) intended to put this particular object, and thus about the reasons the creator(s) had for creating it.
 - Inductive inferences to *general* intentional function – about the functions or uses to which the creator(s) intended to put other members of any

class of which this particular object is understood to be a member, and thus about the reasons the creator(s) had for creating them.

– Inferences to *conventional* function

- Deductive inferences to *particular* conventional function – about the functions or uses to which this particular object has historically been put.
- Inductive inferences to *general* conventional function – about the functions or uses to which other members of any class of which this particular object is understood to be a member have historically been put.

3. Inferences to *meaning*

– Inferences to *intentional* meanings – about the thoughts that the creator intended to express through the symbolic content of the object.

– Inferences to *conventional* meanings – about the meanings that have historically been assigned by readers to the symbolic content of the object.

Documents and Information

In the final sections of this paper, the preceding discussion is used as a basis for drawing two tentative conclusions. The first of these, on the comparability of evidentiarieness and relevance, involves a comparison of the concerns of archival science and information science, and it may be helpful if, in this and the following section, the nature of the relationship between those concerns is explored in a little further detail.

Archives work (and archival science) may be distinguished from librarianship (and library and information science), and again from museum work (and museum studies), in many respects. The histories of the respective professions and associated disciplines have unfolded separately over many centuries, and obvious points of difference include goals, principles, and methods. It is also clear, however, that the three communities share a concern with a common object of attention – the human artifact.

Librarians and information scientists are concerned with the preservation and provision of access to artifacts that have symbolic content of the kind described earlier. It is in virtue of this content that such artifacts are characterized as documents; it is this content – or its container or its meaning – that is commonly identified as information. For librarians, the most interesting property of artifacts is their “documentness” – i.e., their informativeness, the degree to which they are informative, their status as information.

Librarians' conceptions of the *way* in which documents are informative have varied historically.⁴² At the objectivist end of the spectrum of conceptions, documents are treated as containers of meaning whose movement from one location to another wholly constitutes the process we know as communication. According to this reading, the informativeness of a document is an inherent property of that document. At the subjectivist end of the spectrum, documents are treated as objects to which meaning is assigned by the reader, and informativeness is assumed to be a property of the document–reader pair. By the objectivist account, it is possible to determine the degree to which a document is informative by calculating the probability of its being selected by chance from the universe of potential documents. Subjectivist theories suggest that informativeness is more properly equated with relevance, and measured by calculating the probability with which a given reader will express a preference for a given document.

Notwithstanding this variation among conceptions of informativeness, at all points of the spectrum a distinction is commonly made between two essential components of documents: the container, signal, or utterance on the one hand, and the content, message, or thought on the other. The relationship between signal and message – between utterance and thought – is one of meaning; a document, as a symbolic entity, is meaningful to the extent that it expresses thoughts, or mental entities. In turn, thoughts may themselves be conceived as having content, in the form of the physical situations or events (actual or potential) that are the objects of those thoughts.

Records and Evidence

Documents and other artifacts stored in archives are often considered as potential evidence (or potential sources of evidence) of events that occurred in the past. Such artifacts are known as *records* in virtue of this potentiality: an artifact that may potentially serve as the source of grounds for believing that a particular event happened is a record. For archivists, the “recordness” of an artifact – its status as a record – is its most significant property. An artifact is a record to the extent that it is potentially evidentiary. Another way of talking about the recordness of an artifact, then, is to talk about its evidentiariness.

⁴² See, e.g., Rafael Capurro and Birger Hjørland, “The Concept of Information”, *Annual Review of Information Science and Technology* 37 (2003): 343-411.

P1	R asserted that document X_2 is authentic, and R believed that document X_2 is authentic.	$p \wedge q$.
P2	R asserted that document X_3 is authentic, and R believed that document X_3 is authentic.	$p \wedge q$.
P_n	R asserted that document X_n is authentic, and R believed that document X_n is authentic.	$p \wedge q$.
C1 / P3	If R asserted that document X_i is authentic, then R believed that document X_i is authentic.	$p \rightarrow q$.
P4	R asserted that document X_1 is authentic.	p .
C2	R believed that document X_1 is authentic.	q .

Suppose that we have before us a record – one that appears to be a report of the minutes of a meeting of the members of a particular organization. I say “appears to be” since, as well as representing in writing the content of the discussion that supposedly went on at the meeting, the record contains a certain amount of *metadata* about itself, including an indication of the date on which it was authored (not necessarily the same date as that on which the meeting took place), a note of the identity of the author, and a certification of authenticity – a statement, assertion or guarantee made by the author, or by a third party, that may take the form of a simple signature – by means of which it is certified that the document is, in actual fact, what it purports to be. What is the process of reasoning through which we may arrive at the conclusion that the meeting reported in this document actually took place?

First, we must establish the reliability of the authenticator, R. If that person were demonstrated to have behaved unreliably in the past – if it were discovered that the authenticator sometimes fails to faithfully express their actual beliefs about the authenticity of documents – then we would be forced to conclude that there is some reason to believe that the authenticator did not believe in the authenticity of the document in question, that this document is in fact inauthentic, and that the meeting reported in the document did not take place. So we must first consider what we might call the *evidence of reliability*.

Second, we must establish the authenticity of other documents similar to this one in some relevant respect. If these other documents were demonstrated to be inauthentic – if it were discovered that the certifications of authenticity of these documents sometimes fail to correspond accurately with their actual authenticity – then again we

P1	R believed that document X_2 is authentic, and document X_2 is authentic.	$p \wedge q$.
P2	R believed that document X_3 is authentic, and document X_3 is authentic.	$p \wedge q$.
P_n	R believed that document X_n is authentic, and document X_n is authentic.	$p \wedge q$.
C1 / P3	If R believed that document X_i is authentic, then document X_i is authentic.	$p \rightarrow q$.
P4	R believed that document X_1 is authentic.	p .
C2	Document X_1 is authentic.	q .
<hr/>		
P1	If authentic document X_i exists, then event Y_i occurred.	$p \rightarrow q$.
P2	Authentic document X_1 exists.	p .
C1	Event Y_1 occurred.	q .

would be forced to conclude that there is some reason to believe that the document in question is in fact inauthentic, and that the meeting reported in the document did not take place. So we must consider what we might call the *evidence of authenticity*.

The proposition that document X_i is authentic is equivalent to the proposition that the occurrence of event Y_i (i.e., the event that is specified by the metadata associated with document X_i) is a necessary condition for the existence of document X_i . In other words, if X_i exists, then Y_i occurred. Thus, a simple deduction on the basis of what we might call *evidence of activity* is all that is needed to establish the truth of the belief that event Y_1 occurred.

Evidentiarieness as Relevance

Distinctive conceptions of information abound in the literature.⁴³ It remains difficult (and it would not necessarily be desirable) to identify a single conception that is useful in all or even most circumstances,

⁴³ See Jonathan Furner, "Information Studies without Information", *Library Trends* 52(3) (2004): 427-446.

even within the relatively narrow scope of the library and information sciences. The same can be said of conceptions of evidence in the context of the archival sciences.

It is possible, nevertheless, to compare individual pairs of conceptions of evidence and information with a view to establishing the extent and nature of any overlap. One of the more promising approaches might be to focus on the shared propositional nature of two conceptions of relatively wide acceptance and application, viz., documents as the sources of potentially relevant ideas (i.e., information), and records as the sources of potentially evidentiary ideas. Taking this approach might have the interesting effect of revising the motivation for the initial comparison, so that the objective is recast as one of relating not evidence to information, but evidentiarity to relevance. Just as evidentiarity is a property of the relationship between one set of propositions (i.e., premises) to another (a conclusion), relevance is a property of the relationship between one set of propositions (i.e., a document) to another (a query). Sets of premises are evaluated in order to measure the weight of evidence they supply for conclusions; documents are evaluated in order to measure the degree of relevance they have to queries. Both evidentiarity and relevance are matters of degree; both are probabilistic. On this reading, to seek to define the link between evidence and information is perhaps to set oneself the less interesting challenge.

Archival Science as Social Epistemology

The second conclusion to be drawn in this paper is the result of a comparison of the goals of archival science with those of a particular sub-field of contemporary epistemology. Epistemology may be considered as a field of *normative* inquiry to the extent that its goals are assumed to include (i) to establish a method of determining the likelihood with which our taking a particular course of action will allow us successfully to acquire knowledge in the future, consequently (ii) to enable us to rank, in order of expected success (i.e., expected epistemic value), those courses of action that are candidates in any given situation, and thus (iii) to guide our knowledge-seeking practices. In these terms, the central question that epistemology poses is not to be construed as “How do we acquire knowledge?” or even as “How have we gone about successfully acquiring knowledge in the past?” but “How ought we to go about acquiring knowledge, given our particular interests and priorities, and given the knowledge that we already have about the world?”

On this reading, epistemology may also be treated as a *naturalistic* discipline to the extent that it recognizes the possibility of meeting these normative goals only once account is taken of empirical data about the natural world – specifically, the actual epistemic values assessed of past courses of action. A naturalized epistemology is one that itself relies on the distinctive knowledge-generating method of the natural sciences to provide support for its normative claims, rather than seeking confirmation purely through rational argument.⁴⁴

A *veritistic* epistemology is one in which any given belief must be true before it may count as knowledge; a *reliabilist* epistemology is one in which, furthermore, the status of any given belief as knowledge depends on its having been generated as a result of a procedure that has produced mainly true belief in the past – i.e., a procedure that is generally reliable in its propensity for causing belief that is true rather than false. Epistemology may further be characterized as *social* to the extent that its assessments of the epistemic value of past and future courses of action require prior evaluation of the activities of parties other than the individual knower. Many of the personal beliefs held by individual knowers are caused by those people’s decisions to accept as true, and to treat as evidence in support of further conclusions, the statements made by others. People who are evaluated as reliably truth-telling are said to be trustworthy; their past reliability justifies our continuing to place our trust in them, and to accept their testimony as true without seeking additional corroboration. The normative goal of one dominant variety of social epistemology – a veritistic flavor primarily developed by the reliabilist Goldman – is to specify the kinds of social practice that we may rely on most surely to generate true beliefs.⁴⁵

The program outlined by Goldman has found application in jurisprudence and in information science, among other cognate fields. In both cases, the application predates its being labeled explicitly as “social epistemology.” Focusing on the legal regulations that specify the kinds of evidence that are admissible in court, Leiter⁴⁶ suggests how Goldman’s framework may inform an existing strand of legal scholarship that seeks to measure the effect of individual rules of

⁴⁴ See, e.g., Philip Kitcher, “The Naturalists Return”, *Philosophical Review* 101(1) (1992): 53–114.

⁴⁵ See Alvin Goldman, *Knowledge in a Social World* (Oxford, 1999); and Goldman, “The Need for Social Epistemology”, in Brian Leiter (ed.), *The Future for Philosophy* (Oxford, 2004), pp. 182–207.

⁴⁶ See Ronald J. Allen and Brian Leiter, “Naturalized Epistemology and the Law of Evidence”, *Virginia Law Review* 87 (2001): 1491–1550; and Leiter, “Prospects and Problems for the Social Epistemology of Evidence Law”, *Philosophical Topics* 29(1/2) (2001): 319–332.

evidence on the likelihood that jurors will draw true conclusions from the evidence presented to them. Fallis⁴⁷ describes, in social-epistemological terms, how readers of web pages can help themselves in their searches for true information if they succeed in taking account of contextual indicators of the veracity of individual pages' content.

Given such models, it is possible to imagine how archival science might adopt the framework of veritistic social epistemology with a view (i) to improving our understanding of the nature and comparative significance of attempts to clarify the concept of archival evidence, and (ii) to establishing heuristics for selecting among candidate procedures for obtaining knowledge from archival records. Those models of archival practice that require the authenticity of the record and the reliability of its creator to be established before its evidential value can be assessed appear to share the reliabilist's distinctive assumption that knowledge is belief caused by a generally reliable process, and it would no doubt be of interest (both to epistemologists and to archival scientists) to investigate further the value of social epistemology as a theoretical foundation for archival science.

Conceptual Analysis as a Method of Promise

As was stated at the outset, the aim of the present paper has been to assess the utility of a particular method – namely, conceptual analysis – when applied in addressing a particular problem – that of improving understanding of the nature, scope, and function of the phenomena that are commonly grouped by archival scientists under the heading of “evidence.” It was assumed that, if such understanding were to turn out to be enhanced as a result of the application of such a method, then not only would we be enabled to generate interesting ideas for future research, but we would also thereby be justified in evaluating that application as successful, and in evaluating the method as potentially of more-general utility in archival science.

In the paper, the meaning of the concept labelled “evidence” was defined as a class of phenomena – viz., those things that we consider in order to infer a conclusion. Several candidates for necessary conditions of evidentiarieness – relationality, measurability, physicality, substantiality, meaningfulness, objectivity – were identified and examined, and

⁴⁷ See Don Fallis, “Veritistic Social Epistemology and Information Science”, *Social Epistemology* 14 (2000): 305-316; and Fallis, “Social Epistemology and Information Science”, *Annual Review of Information Science and Technology* 40 (forthcoming).

taxonomies were presented (i) of multiple kinds of evidentiarieness, varying in the appropriateness with which they are attributable to situations, events, utterances, and ideas, and (ii) of multiple kinds of inference, varying in their purpose, in their level of generality, and in the extent to which they capture intentionality and conventionality. On the basis of this conceptual framework, a correspondence was shown to exist between the use of the concept of evidentiarieness in archival science and the use of the concept of relevance in information science; and an analogy was drawn between the purpose of archival science and that of social epistemology. It is asserted that these correspondences are worthy of further investigation, and that their identification allows for innovative thinking about the nature and purpose of archival processes and the function and design of archival systems. On the basis of the evidence thereby provided, we may tentatively infer that conceptual analysis may profitably be used to improve understanding not just of the concept of evidence (central as it is to archivists' concerns), but of other concepts germane to archival science.