

Evaluating Internet Resources: Identity, Affiliation, and Cognitive Authority in a Networked World

John W. Fritch

Assistant Professor of Library Science, Hicks Undergraduate Library, Purdue University, West Lafayette, IN 47907. E-mail: jfritch1@purdue.edu

Robert L. Cromwell

Cromwell Consulting and Research, P.O. Box 2184, West Lafayette, IN 47907. E-mail: cromwell@ecn.purdue.edu

Many people fail to properly evaluate Internet information. This is often due to a lack of understanding of the issues surrounding evaluation and authority, and, more specifically, a lack of understanding of the structure and modi operandi of the Internet and the Domain Name System. The fact that evaluation is not being properly performed on Internet information means both that questionable information is being used recklessly, without adequately assessing its authority, and good information is being disregarded, because trust in the information is lacking. Both scenarios may be resolved by ascribing proper amounts of cognitive authority to Internet information. Traditional measures of authority present in a print environment are lacking on the Internet, and, even when occasionally present, are of questionable veracity. A formal model and evaluative criteria are herein suggested and explained to provide a means for accurately ascribing cognitive authority in a networked environment; the model is unique in its representation of overt and covert affiliations as a mechanism for ascribing proper authority to Internet information.

Cognitive Authority and the Internet

Many authors have stated that the evaluation of Internet information is similar to the evaluation of print materials, and that many of the same evaluative criteria apply in both media (Brandt, 1996; Katz, 1997; McMurdo, 1998; Tate & Alexander, 1996). "Authority" is a recurring criterion with regard to evaluation of both print and electronic information. Yet the word "authority" has multiple meanings, and without exposition it is difficult to determine the exact meaning of authority in this context.

For clarification, we can turn to Patrick Wilson (1983) and his seminal work in social epistemology. Wilson dif-

ferentiates between different basic types of authority, such as cognitive authority (influence on thoughts), administrative authority (influence on actions), and institutional authority (influence derived from institutional affiliation).

Wilson provides a basic definition of cognitive authority: "Cognitive authority is influence on one's thoughts that one would consciously recognize as proper." He further clarifies the meaning of cognitive authority by stating that cognitive authority is related to credibility, and that credibility has two main components: competence and trustworthiness. Wilson eventually links the cognitive authority of a work directly to the cognitive authority of its author(s).

Questions often arise about how much cognitive authority to ascribe to a particular individual or institution; questions involving quality and credibility repeatedly recur as we work with information and information sources. Especially on the Internet, we are sometimes forced to ascribe authority at least partially through institutional or organizational affiliation because we lack other bona fide authority cues and indicators. In fact, in a study of information quality and authority on the World Wide Web, Rieh and Belkin (1998) found that organizational affiliation was one of the most important factors used by faculty members and graduate students in ascribing authority to Internet information.

Cognitive authority, as Wilson defines it, seems to be what is being referred to in articles discussing the evaluation of Internet information, although some authors may be referring specifically to institutional authority. Although there is no definitive answer to the question of how much cognitive authority a specific work in either print or electronic form deserves, the authors of this article posit that substantial information can be gathered to inform discussions of quality and authority with regard to Internet information, and analysis should go beyond institutional authority to also examine affiliations—both overt and covert—between individuals and institutions. Wilson has indicated that several things are essential in ascribing cognitive au-

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thority to a work: determining the identity of the author of a work, determining the author's competence and trustworthiness, and determining which types of authority are applicable.

This article provides a theoretical framework for gathering and assessing Internet information with regard to cognitive authority. It also provides specific criteria that should be considered when evaluating the authority of Internet information (especially information of questionable origin or veracity).

Rationale for Carefully Ascribing Cognitive Authority to Internet Information

The credibility of Internet information has long been called into question. In fact, there is a taxonomy of at least 10 identified forms of "misinformation" or "disinformation" presented on or via the Internet, and no one knows how much misinformation is actually promulgated in this way (Fitzgerald, 1997; Floridi, 1996). Hernon and Altman (1995) conducted interviews with librarians, and found that those interviewed perceived networked information systems as a potential source of disinformation and misinformation due to the nature of electronic media.

One reason why determining authority for Internet information is so difficult is that traditional authority indicators are usually absent in an electronic environment. Johnson (1995) has argued that because electronic information is usually without common publication conventions such as title page, verso, and colophon, it is extremely difficult to locate basic information, rendering it "too often impossible" to ascribe authorship, title, version, and place of origin for works in electronic form. Others have also voiced this complaint, and noted that even if basic authorship information is provided, author qualifications and credentials are often absent (Tate & Alexander, 1996). Thus, we find that there is difficulty even in attributing basic elements of authority, such as author and title of a work, when considering electronic media.

Even if such basic attribution information is provided, given the nature of electronic information, there could easily be some question as to its veracity. Electronic information on the Internet can be "published" by almost anyone, plagiarized virtually instantaneously, and created seemingly anonymously or under false pretenses. There is often no statement of attribution for what appears on the Web or in e-mail messages, rendering it extremely difficult to judge the cognitive authority of given information. At other times, the authority of particular electronic information is based upon who claims to have created or posted it. Anyone can *claim* to be someone else on the Internet.¹

There is also virtually no filtering of information on the Internet, increasing the need for assessment of cognitive

authority. Filters of information typically present in a print environment (publishing houses, editors, reviewers, librarians/selectors) are often not present on the Internet. If typical filters are bypassed in a print environment (i.e., by using "subsidy" or "vanity" presses, self-publishing etc.), an astute reader usually has the ability to determine what has occurred using title page information and publisher information, and special consideration can be given to this when ascribing authority. It should also be noted that there is a significant out-of-pocket expense associated with bypassing traditional publishers in a print environment, while no such barrier exists on the Internet. Nor are there significant barriers to any type of "vanity" publishing on the Internet, other than the requirement of a computer, a connection to the Internet, and some basic knowledge of HTML or Web-authoring software (Web space is commonly available at no charge from Internet companies such as GeoCities and Angelfire).

Criteria and Presumptions for Ascribing Cognitive Authority

Books, articles, and many Web pages discuss basic evaluative criteria for Internet information, and emphasize the need for such evaluation (Auer, 2000; Smith, 2000). One Web site of particular renown is authored by two librarians, Jan Alexander and Marcia Tate² (1996–1999), and it discusses Web evaluation by grouping Web pages into different categories, such as Advocacy, Business/Marketing, News, Informational, and Personal pages. Although the evaluative questions concerning the different categories of pages vary slightly, the criteria Alexander and Tate recommend for evaluation remain the same: Authority, Accuracy, Objectivity, Currency, and Coverage. These criteria, oft listed as standard criteria in reference textbooks, are indeed important in helping to ascribe overall cognitive authority to *any* information source.

Yet a more detailed level of evaluation may be necessary when ascribing cognitive authority to Internet information. Determining authorship and affiliation (i.e., who authored or sponsors particular information; who is actually responsible for particular Web pages) may well be the most important criteria in the evaluation of Internet information because of the impact that these criteria have on ascribing cognitive authority. Few articles in library and information science address the problem of actually determining author identity or affiliation with regard to Internet information, other than to use attribution information proffered on a particular site, advertising information, or information discovered in the top-level domain name of an Uniform Resource Locator (URL).

The often-recommended techniques of ascribing authority by relying on proffered attribution information or insti-

¹ Hence, the need for public-key encryption and digital signatures, tools that distinguish one individual from another in a networked environment. Although they cannot absolutely *prove* identity, they can reduce the risk of "identity masquerading" to a very small probability.

² Additional discussion of Web evaluation for different types of Web pages is available in a book by the same authors entitled *Web Wisdom: How to Evaluate and Create Information Quality on the Web* (Alexander & Tate, 1999).

tutional affiliation derived through top-level domain names are based on a number of presumptions that may, in any specific instance, be faulty. These presumptions are:

- (1) Author identity is overt or easily determined
- (2) Authors never desire to disguise authorship or sponsorship
- (3) Author authority is related to organizational or institutional authority
- (4) Domain names are standardized and meaningful (never cryptic, irrelevant, or deceptive)
- (5) Users have an understanding of how to determine affiliation and sponsorship of a given Web page or piece of information, and have a knowledge of how to corroborate questionable information
- (6) Users have an understanding of who to contact with regard to questions concerning the authority of a particular site or the authority of particular information

These presumptions are not necessarily accurate, and we believe that the understanding and skill levels of most Internet users with regard to evaluation need to be increased. We posit that another set of presumptions should wield significant influence when ascribing cognitive authority to Internet information:

- (1) Ascription of cognitive authority should initially be independent for each individual author and/or each information source under consideration
- (2) Any time a new information component is added to a body of information, or a new information component is discovered to be relevant to a body of information, the authority of the entire body of collected information is subject to change
- (3) Over time, as research is conducted, the assessment of cognitive authority for a given body of information will tend to converge and stabilize at a particular level as less new information is available for analysis. Confidence in the measure of authority should increase over time
- (4) Ascription methodologies vary from user to user, but an expanded set of criteria for evaluation increases the likelihood that the ascription of cognitive authority will be appropriate for any given body of information
- (5) It is better to be overly skeptical of the authority of Internet information than to be overly naive and trusting of Internet information. The process of ascribing cognitive authority should take the form of disproving initial skepticism, thus ensuring that proper evaluation occurs
- (6) An understanding of the Domain Name System is helpful in ascribing cognitive authority to Internet information, and certain technical tools can assist in this process

Specific Evaluative Criteria for Internet Information

To generate a scheme for ascribing cognitive authority to Internet information, we suggest that the following criteria be considered:

- (1) Author competence and trustworthiness: (a) author identity (can authorship be determined?); (b) author

credentials (degrees, titles, biographical information, experience etc.)

- (2) Document Validity: (a) factual accuracy of information (does the information fail a personal, basic credibility test? Are sources cited? Can the information be corroborated? Is the information out of date?); (b) information presentation and format (updated recently? Statement of responsibility/attribution? Bibliography/references? Well-organized? Indication of edition or version? Site map or index present? Grammatically accurate? etc.); (c) organizational or institutional identity and authority (in this context, determined through analysis of the URL or email address)
- (3) Overt affiliation with an organization, institution, or individual. (In this context, overt affiliation is broader than just examining the URL or e-mail address: consider advertisements, links to organizational home page(s), links to other listings of resources etc.)³
- (4) Covert affiliation with an organization, institution, or individual. (Are there hidden affiliations that are neither obvious nor immediately detectable?)

These criteria have been graphically depicted in a Model for Ascribing Cognitive Authority to Internet Information (Fig. 1).

This model depicts our recommended strategy for ascribing authority to Internet information. We consider four classes of information significant when ascribing authority—document, author, institution, and affiliation. Each class will be assessed in a unique way, following the criteria previously specified.

The model dictates that all input information be divided into classes. We refer to this process as “filtering,” although “grouping,” “categorizing,” or “classifying” would all be synonyms. Four filters are depicted in the model. Information in each class is assessed in a class-specific way. After assessments for individual classes are complete, the model depicts combining individual class assessments to gain an overall assessment of cognitive authority for a given body of information. (We recognize that researchers may choose not to consider some of the prescribed classes when ascribing authority, or indeed to forego any assessment of cognitive authority.)

The model is iterative; as many cycles can be performed as are needed. Over successive iterations, one would expect the system’s output—the assessment of overall cognitive authority—to tend to converge to a stable solution. During initial analysis, and thus the first few cycles, major changes may occur in assessed authority. The magnitude of the change should tend to decrease over time, however, indicating that new information only reinforces the current assessment. It also seems likely that smaller units of new information concerning the entity under scrutiny will be uncovered with each successive iteration through the model.

³ The significance of overt hyperlinks as a measure of authority of a Web site is gaining importance. Search engines such as *Google* utilize overt hyperlinks to rank Internet search results. Information concerning an algorithm developed by IBM that uses hyperlinks to help determine appropriate search engine results is available in Chakrabarti et. al. (1999).

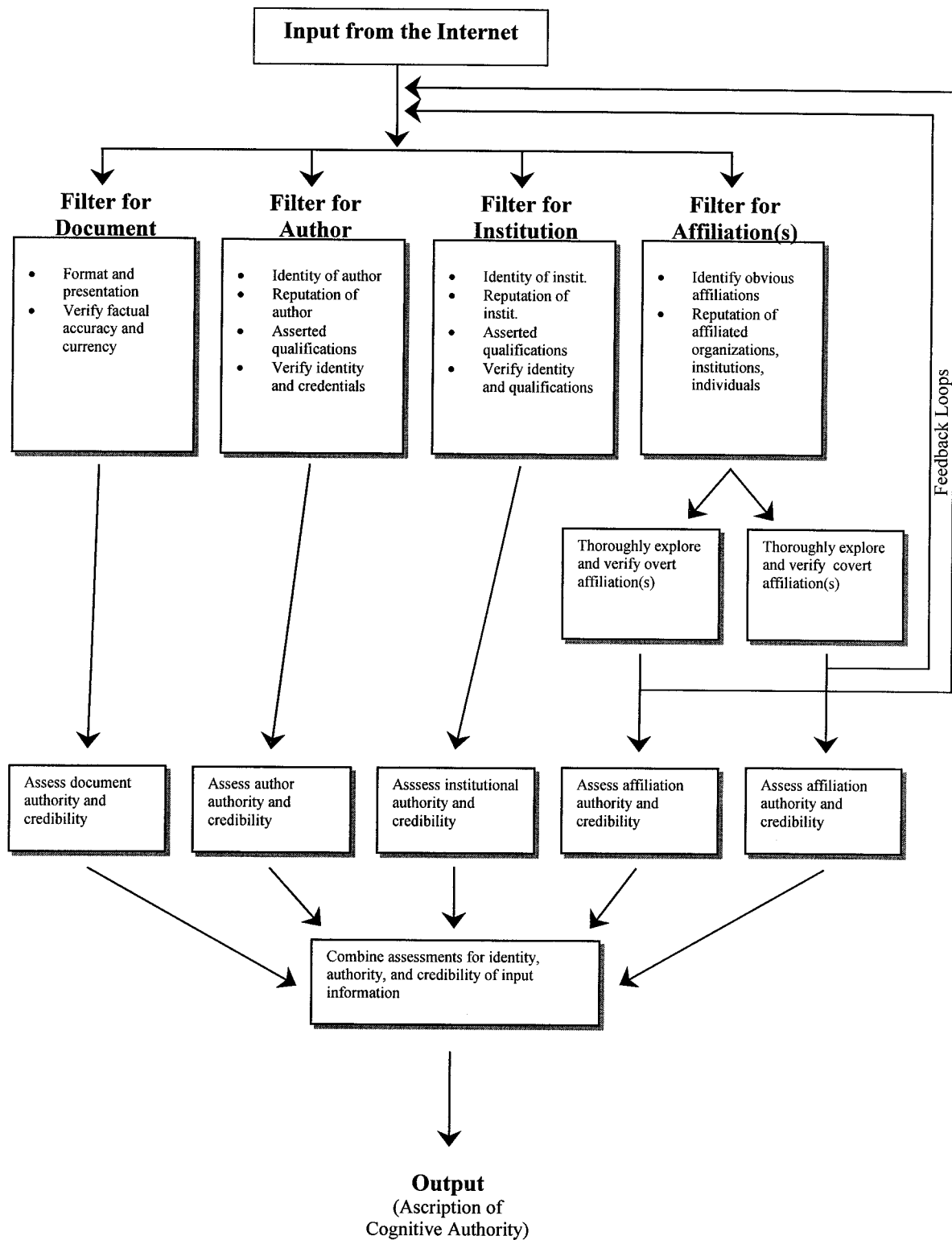


FIG. 1. Model for ascribing cognitive authority to Internet information.

The probable stabilization of iterations over time has been depicted in Figure 2. In this figure, we use two measures relating to authority. The first, labeled “Cognitive Authority,” estimates the proper amount of influence to give to the information. The second, labeled “Confidence,” estimates the accuracy of the authority assessment.

In Figure 2, we have plotted authority to range from -1 to 1 . An authority value of zero indicates no influence—the input information is effectively “noise,” and is totally disregarded. Positive values indicate positive cognitive authority—one would tend to believe that the truth is accurately described in the input information. Negative values indicate

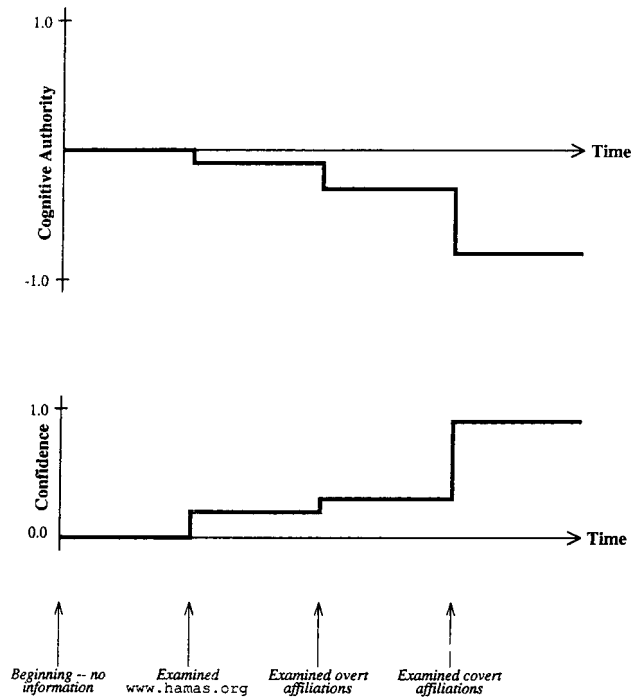


FIG. 2. One researcher's assessment of cognitive authority and confidence over time while assessing the www.hammas.org Web site.

negative cognitive authority—one would tend to believe that the truth must be the opposite of the input information. The measure of authority always begins at zero but will change as information is assessed.

Confidence is plotted to range from 0 to 1. Confidence is the estimate of the accuracy of the assessment of authority. It is meant to be the probability of accuracy, where 0 indicates no chance and 1 indicates certainty. Confidence always begins at zero, but it should increase as more information is assessed. As confidence increases, we expect smaller changes in estimates of cognitive authority.

Consider an information source that is known to always be wrong. It would have a negative cognitive authority, approaching -1 . At the same time, our certainty in its incorrectness dictates a high confidence level, approaching 1. These are important measures, because the high confidence makes it appropriate to ascribe negative cognitive authority to the information coming from this source. In other words, this source can provide useful information by delineating what is *not* true.

To ascribe cognitive authority to a body of information, we suggest that a researcher should first assess each class of information independently, then integrate and evaluate the results to ascribe authority to the body of information as a whole. Each assessment of a class of information produces measures of authority and confidence based only on that class of information. These multiple measures of authority and confidence, based on different types of information, can be combined to produce an overall measure of authority and confidence. Some researchers may choose to use only one class of information, so their "combination" is simply the assessment of that one class.

How should assessments of individual classes be combined? There is no one answer—the appropriate combination methodology depends on the purpose of the information gathering and individual preferences and experience. Methods for combining input assessments are highly personal, and this process might be difficult for many researchers to articulate.

The model is unique in that it calls for additional exploration and verification of both overt and covert affiliations, which may be neglected or ignored by many researchers, but which may prove extremely fruitful in either reinforcing or disproving prior opinions concerning authority.

An Illustrative Example

To illustrate the usefulness of the model and criteria, we have selected an example that demonstrates why and how an astute researcher may come to question the cognitive authority of a site.

Let's pretend to observe the activity of an astute researcher who is familiar with the preceding model and criteria for ascribing cognitive authority to networked information. This researcher's job involves ascribing authority to Internet information, and the researcher's supervisor has just directed him/her to analyze information from the domain hamas.org. The researcher has been told that this is part of his/her firm's ongoing study of the organization Hamas (an acronym for the Arabic name *Harakat Muqama al-Islamiyya*, meaning the Movement of Islamic Resistance). Our researcher is only slightly familiar with Hamas, but has heard that it is based in the Middle East. What can one determine about the proper amount of cognitive authority to ascribe to information at hamas.org, and where should one begin the investigation?

A first step is to initialize the model; that is, to recognize that an investigation is beginning and that the model can assist with this. The next step in the research process might be to find out what information exists about Hamas as a registered domain name or a registrant name in the DNS (Domain Name System) database. Performing a Whois search for "hamas" yields three results:

- hamas.org—Commtech software
- hamas.net—Hamas
- hamas.com—Video Images Productions

Upon initial examination, hamas.net appears to be the likely choice to find out about Hamas as an organization, because Hamas is the registrant. A quick perusal of the records indicates that hamas.net has a post office box in Beirut, Lebanon, as the contact address, which would seem to fit expectations, given the researcher's initial knowledge. Yet when our researcher tries to examine www.hammas.net or other likely hostnames under the hamas.net domain, s/he finds no site on the Internet under that URL. If s/he queries the specified authoritative nameservers listed in the Whois records for that domain, s/he discovers that the nameservers do not have any information for hamas.net. So at this point, given that this is apparently a dead end, our researcher turns to examine the other two domains.

Hamas.com appears to be irrelevant, judging by Whois records, because it is registered to a company called Video Images Productions. An attempt to review www.hamas.com on the Web yields a URL redirect to www.hotindex.com, which in turn, yields only random advertisements, again suggesting irrelevance. In terms of the model, the document contents at this site so strongly suggest irrelevance that the researcher has a very high confidence that this site has zero cognitive authority regarding the organization Hamas.

Our researcher then turns to the third option, hamas.org. Because this information source is completely separate from hamas.com and hamas.net, our researcher again reinitializes the model to start a completely new analysis. Although the hamas.org Whois records do not appear applicable, because the site is registered to a company called Commtech Software in Los Angeles, our researcher decides to investigate whether there is a Web presence for Hamas at www.hamas.org.

Our researcher discovers that there is, in fact, a Web site at www.hamas.org.⁴ At this site, our researcher finds some information about the organization Hamas and about Palestine and Israel. There are statements claiming that the developers of the site are not affiliated with Hamas in any way, and that they are merely trying to put up information about Hamas to educate the public. Our researcher finds this interesting, and notes that the only contact information listed on these pages is the e-mail address webmaster@hamas.org. Our researcher wonders who put these pages together, and why the pages actually exist. The authors claim no affiliation with Hamas, the site is not information rich, and this site actually has a link to what it terms "The Official Hamas site." With curiosity piqued, our researcher decides to investigate further to see what, if anything, can be determined about the owners of the site and their relationship to any other entities or organizations. The hope is that this investigation will indicate how much cognitive authority the hamas.org site deserves. Is it really an unbiased site put up by people unaffiliated with Hamas and concerned only with educating the public? Could discovered affiliations change the amount of cognitive authority that our researcher would ascribe to this site?

In terms of the Model for Ascribing Cognitive Authority, our researcher has made one pass through the Model for www.hamas.org and come up with preliminary measures of cognitive authority for various data classes: document, author, and institution. These have been combined into initial estimates of cognitive authority and confidence, given what has been discovered and the researcher's experience and background. The researcher's estimate of cognitive authority for the site is currently slightly less than zero (due to statements of nonaffiliation with Hamas), while the confidence level is very low (due to the limited information uncovered so far). Consider that others might automatically

⁴ At the time of writing, careful analysis of DNS records indicate that there is only one host in the hamas.org domain.

accord this site high cognitive authority, but our researcher is seasoned and diligent in his/her efforts at ascribing proper authority. Past experience has taught him/her to investigate thoroughly when s/he has any questions regarding authority, and here s/he has found reason to question: Who is the author of this site? Why no mention of an individual or organizational author if the site is really intended to be unbiased and informative? What can our researcher determine about affiliations, and how might any discovered affiliations alter the assessment?

The researcher's first clues to these questions have already begun to be answered by the information on the Web pages at the hamas.org site (the "document" filter in the model). The hamas.org site actually has a page labeled "affiliations," and that page informs readers that the site's owners have no affiliation with any government(s):

This website is not affiliated to any national government. Its sole purpose is to provide information and educate the general public on the nature of the organization and bring light to the fact the Palestinian people are living in horrific conditions under Israeli occupation. The site providers do not and will not accept any financial support from any government and rely solely on contributions from private individuals concerned about bringing the truth to the public.

This site also has a page titled "A Message from the Editor," which states that there is no affiliation with Hamas in any way, or any government, and that the developers of the site are concerned in presenting "a more equitable point of view to the situation in the Palestine." The "editor" is never identified in any way, on this page or anywhere else on the site.

Several pages on this site overtly reference "truth" and "educating the public" regarding conditions of Palestinians under Israeli rule. Our researcher wonders if more than one viewpoint with regard to issues relating to Palestinian conflicts is represented on these pages, to facilitate education and present an unbiased view. A conclusion regarding this could be determined largely through analysis of the text and links presented on this site, and it is not our intention to unduly influence readers to one opinion or another in this regard. We are, however, suggesting that the "document" class of information can assist in assessment, and we presume that most Internet researchers would take advantage of clues gathered from that class of information. Yet assessment of the "document" class of information is not the primary focus of this article. More interesting for our purposes is what the "affiliation" class of information can tell us about this site, and whether an analysis of affiliations can assist in determining authorship and responsibility for the site as well as possible bias. Moreover, affiliation may also inform other classes of information such as "author" and "institution." The distinct classes of information can, when combined, lead one to question the proper amount of cognitive authority to ascribe to a site, and also reveal why multiple iterations through the Model for Ascribing Cognitive Authority might be necessary in complex situations.

The next step our researcher takes is to examine overt affiliations, based on links to various organizational Web sites from the www.hamas.org site. The overt links provide more information, which will be input to the model via the feedback loop. There may also be covert affiliations, which could provide additional information.

Examining the overt links at the site proves fruitful. Our researcher notes that only sites that would seem to favor a Palestinian viewpoint are represented on a page titled “The Most Comprehensive Links List Anywhere,” suggesting that the site might be biased in favor of Palestinian perspectives. No pro-Israel or pro-Israeli sites were found on this purportedly comprehensive list of links.

Our researcher’s ascription of authority and estimate of confidence should change, based on this new information. The ascribed authority at this time has decreased, due to the newly perceived bias of the site. Given that more information has been used to reach this conclusion, confidence has increased slightly. As one gathers more information, confidence in any conclusions reached should be monotonically nondecreasing, as long as the information is consistent. If new information contradicts that which has come before, however, confidence should decrease, perhaps significantly.

Our researcher now decides to explore whether there might be covert affiliations, or affiliations that are not openly expressed. S/He begins by searching the Whois database for any occurrences of the name “Commtech,” the company previously discovered to be the registrant of the domain www.hamas.org. Commtech Software appears twice in the results of this search—once with the domain www.hamas.org, and again with the domain www.hezbollah.org. This, our researcher concludes, may be an interesting and significant affiliation, for Hezbollah is known as an organization that is strongly opposed to Israeli presence in the Middle East. The same company, Commtech Software, is the registrant for both domains, informing our researcher that there is a connection between www.hezbollah.org and www.hamas.org. S/He next decides to check Whois records for the entity www.hezbollah.org, and s/he discovers that the Whois records are *essentially identical* for the two domains, www.hezbollah.org and www.hamas.org, confirming that there is an affiliation between the two. The two domains not only have identical registrants, but also have identical Administrative Contacts, Technical Contacts, Billing Contacts, and DNS nameservers. In terms of the Model for Ascription of Cognitive Authority, the two domains, and thus any collections of documents hosted from within those domains, share common institutional qualities. This might suggest that the authors are identical.

It is interesting to note that www.hezbollah.org was listed in the set of overt links provided by www.hamas.org, yet no mention was made of their common institution. To use information considered in the “document” portion of the model, one could easily notice that the Web sites at www.hamas.org and www.hezbollah.org are strikingly similar. But why does www.hamas.org not mention the common background, make some mention of “our other site”? One might surmise that the authors of these sites are trying to form what could be

termed “an overwhelming consensus of one” in order to give the appearance of wide-spread support. (Organizations such as PETA seem to utilize this technique—providing many seemingly disparate Web sites that share common viewpoints and authorship, although the common authorship is not made obvious to readers.)

Our researcher decides s/he should look at the www.hezbollah.org Web site to see what information is present, and so follows the overt link from www.hamas.org to www.hezbollah.org. Upon examination of the “document” class of information at www.hezbollah.org, s/he concludes that this Web site is much more vocal and supportive in its approach to Palestinian viewpoints, going so far as to put a photo of a child with legs missing below the knees and one hand missing and the caption: “One of the millions of victims of the Israeli aggression in Lebanon.” The layout of this Web site is remarkably similar to the layout of www.hamas.org. This site offers the following statement (under “Introduction”):

The Hezbollah or Party of God is Lebanon’s biggest and most popular political party. Hezbollah is a home-grown organization made up of patriots seeking self determination and political equality. It is committed to liberating Lebanon from Israeli occupation. The Hezbollah platform is based on the fact that no peace can be achieved while Israel continues to occupy Southern Lebanon, and does not adhere to international laws.

This site also disavows any affiliation with a national government, but it is clearer with regard to viewpoint and orientation:

This website is not affiliated to any national government. Its sole purpose is to provide information and to educate the general public on the nature of the organization and bring light to the fact that a significant part of Lebanon remains under Israeli army occupation. The Lebanese people have been living in horrific conditions under this occupation for over fifteen years. Israel continues its racist, murderous policy in Southern Lebanon. The site providers do not get any financial support from any government and rely solely on contributions from individuals concerned about the bringing the truth to the public.

Our researcher notes that overt links on the two Web sites, www.hamas.org and www.hezbollah.org, reference many of the same sites, and s/he now knows that the two sites have the same contact persons, the same layout, and to a certain extent the same content, although Hezbollah appears to use much stronger language (note the inclusion of a new sentence with the words “racist” and “murderous” versus the milder www.hamas.org version).

Our researcher decides to explore more covert affiliation linkage by researching the email contact addresses provided by Whois for the two domains. The Administrative Contact for both sites is W— M—, and his e-mail address is listed as ais@abbc.com, a domain as yet unexplored. So our

researcher decides to run Whois on abc.com. S/He discovers that abc.com is registered to the American Islam Society. The Administrative and Billing Contacts for the American Islam Society are also W— M—. (The technical contact and DNS nameservers are different, but this seems to be because different Internet service providers are being used in different locations.) Our researcher tries to guess at a URL, in this case www.abc.com. This URL takes him/her to the Radio Islam Web site, which has an even stronger array of anti-Israeli links than the previous two sites. This Web site seems to become almost a hate-advocacy page, bearing links to anti-Jewish and anti-Semitic sites. There are also overt links to documents denying the occurrence of the Holocaust, giving the entire site-negative cognitive authority as far as our researcher is concerned.

What can our researcher conclude from all of this? In terms of the Model for the Ascription of Cognitive Authority, s/he now has a great deal more information under both covert and overt affiliations, and his/her analysis of affiliations has helped to inform the “author” class of information as well. Institution, as determined from the URL, has shifted as new affiliations have been explored, but the covert link between them is the consistent name “W— M—,” appearing as the Administrative and Billing Contacts. All sites are quite obviously affiliated, though our researcher did not know this before the affiliation research.

Has this knowledge changed our researcher’s ascription of cognitive authority? In our scenario, yes, in several ways. Cognitive authority has become significantly negative as documents considered to be inaccurate have been discovered and as biases have become more clear. The three sites, www.hamas.org, www.hezbollah.org, and www.abc.com (two of which were uncovered through affiliation research) are at the very least strongly affiliated, and may be institutionally identical. Lower cognitive authority for any one of these sites degrades cognitive authority for other sites closely affiliated with it. Confidence has increased over time due to increased knowledge of authorship and affiliation (both overt and covert), and also due to the fact that no uncovered information contradicted previous conclusions.

Our researcher must consider why these covert affiliations between Web sites and individuals have not been made overt. Do multiple sites sharing the same viewpoint lead readers to believe that a particular viewpoint is authoritative and true? Do varying degrees of rhetoric promote the same ideas in ways acceptable to different audiences? Does professed rhetoric regarding “truth” and “education” stand up to rigorous intellectual scrutiny in terms of representing all sides of the issues in question? There are no easy answers to these questions, and a researcher must draw his/her own conclusions. Yet an ever-accumulating body of evidence can demonstrate that affiliations exist between sites, and these affiliations may lead researchers to question the proper amount of cognitive authority to ascribe in any given circumstances.

Concluding Remarks

The theoretical model and criteria for ascribing cognitive authority presented in this article are important to help people better understand issues surrounding authority and the complexity of the processes of ascribing authority. Under certain circumstances, the authority of a given body of information may be abundantly clear, or, the significance of particular information under scrutiny may not warrant vigorous examination. However, whenever there is reason to doubt the veracity of particular electronic information, or reason to believe that someone could benefit by obfuscating true authorship, ownership, or affiliation, the discussions presented in this article should prove valuable in verifying and ascribing proper cognitive authority to otherwise untrustworthy information.

Authors’ Note: Shortly before this article was due to be published, it was discovered that the content at several of the URLs which we used as examples had suddenly changed—they had been decommissioned or replaced with pornography. The analysis that we describe here was valid from at least 1997 through 2000. Although this means that replication of our results is not possible, it emphasizes our point that there is great need for careful and deliberate ascription of cognitive authority, especially in an ephemeral, networked environment.

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