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The *New York Times* as a resource for Mode 2

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Abstract

The *New York Times* receives more citations from academic journals than the *American Sociological Review*, *Research Policy*, or the *Harvard Law Review*. This paper explores the reasons why scholars cite the *New York Times* so much. Reasons include studying the newspaper itself or New York City, establishing public interest in a topic by referencing press coverage, introducing specificity, and treating the *New York Times* very much like an academic journal. The phenomenon seems to reflect a Mode 2 type of scholarship produced in the context of application, organizationally diverse, socially accountable and aiming to be socially useful as well as high quality as assessed by peers.

Introduction

A near cipher two centuries ago, social knowledge has subsequently become a ubiquitous feature of the societal landscape, buffeting those in our own time with . . . literally hundreds of thousands of books, articles, and lectures that are produced annually both by academic social scientists and by journalists, jurists, pundits, personal advisers, and innumerable other creators and distributors of varieties of human knowledge that fall beyond the bounds of the natural sciences. (Camic et al., 2011, p. 3)

Recognizing that social knowledge has become ubiquitous in our “knowledge society” but also that science studies has relatively little insight to offer about social knowledge¹, Camic, Gross and Lamont argue for the importance of understanding knowledge creation beyond science and medicine. Along with the pervasive reach of social knowledge, in the passage above Camic et al. acknowledge different genres of social knowledge, in particular journalism and scholarship. The book explores the nature of social knowledge making which is practiced in settings beyond academia and in interaction between genres, that is in relatively porous social locations, as opposed to a more traditional picture of a social thinker’s academic discipline overlaid with a few macrosocial factors (Camic et al., p. 27). In the picture that emerges knowledge cannot be derived from a list of factors, nor is scholarship delicate and always in danger of being overwhelmed when brought into contact with other institutions. Rather, nothing is self-contained, and many of the studies in the book explore how knowledge emerges in settings where academic approaches intertwine with other genres contributing to what Schudson (2010) calls the emerging ecology of public knowledge. Here we further explore this theme, examining how scholarship interacts with another genre of social knowledge making – newspaper journalism. Since we found that scholarship interacts less with newspapers in general than with the *New York Times* (NYT) in particular (see Figure 3 below), we dissect the relationship between scholarship and the NYT. We approach this relationship through texts by gathering all references to the NYT from academic literature and inspecting citation contexts to explore how scholars are using the NYT in constructing their arguments. In this paper we explore the intermingling of two porous genres of social knowledge making: scholarship and newspaper journalism, in particular the *New York Times*.

Trends in and extent of NYT citing

Six thousand academic papers cited material from the *New York Times* in 2010. This is approximately 1% of US papers published in 2010 and indexed in the Web of Science. Because the number of papers with US authors that reference the *New York Times* has more than tripled over the past 30 years, while the number of papers indexed in the Web of Science doubled, the share of papers that reference the NYT has grown. Figure 1 compares the growth in number of US papers that reference the *New York Times* with growth in all US papers. The share of US papers referencing the NYT grew from 0.77% to 1.25% between 1980 and 2010.

Notable in Figure 1 is the accelerated growth in NYT referencing starting in 2006. There are some grounds to believe that the acceleration might have been due to increased availability. In 1996 the NYT launched its website; this appeared to make no difference to usage of the *New York Times* among scholars. Google News was launched in 2002, three years prior to the sharp uptick in NYT referencing in published

papers. In 2005, Dialog obtained the archive back to 1980 and Factiva back to 1996 (before this they were limited to 90 days of material for US subscribers). Finally, in 2008 NYT content back to 1851 became available on the website. The greater availability of NYT material through Google News, Dialog and Factiva is most plausibly credited with launching the faster growth in NYT referencing. Easier access led to greater use of the NYT by academics. The field of law provides a counter example that strengthens this case. From 1983 Nexis had an exclusive agreement with the *New York Times* to host the archive of NYT content back to 1980² giving legal scholars access; their NYT referencing does not accelerate after 2006.

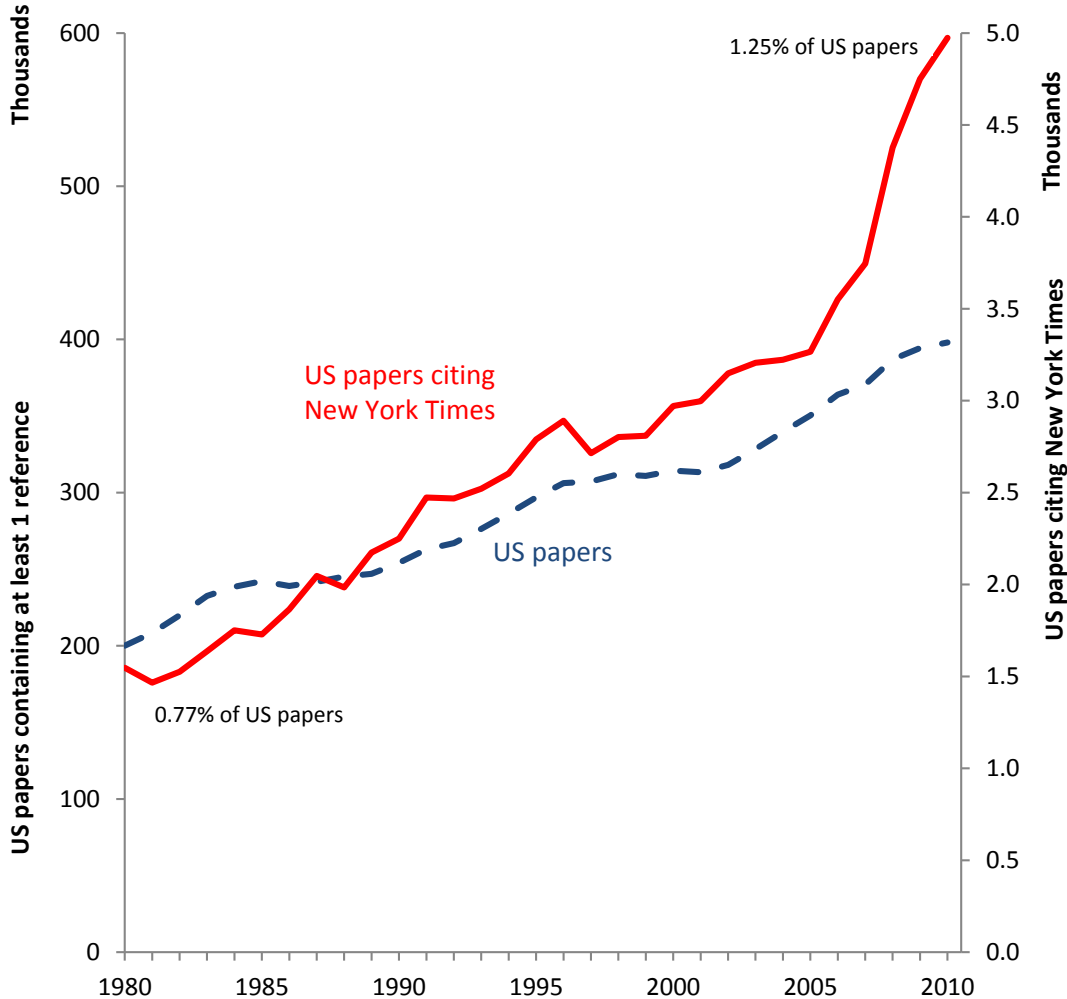


Figure 1 - Growth in US papers and US papers referencing the *New York Times*

References to the *New York Times* are found in papers across science, technology, social sciences and humanities.³ Figure 2 maps the papers published in 2010 that reference the NYT taking the science overlay map developed by Rafols, Porter and Leydesdorff (2010) as the base framework upon which NYT citing papers are highlighted. We see that NYT citing papers are sprinkled across the map,⁴ although the social sciences are most active in referencing the NYT and so are plotted using the largest circles. Table 1 compares the distribution of papers referencing the NYT across fields in 2010 with the 2009 distribution of US papers and highlights the heavy concentration of NYT citing papers in social sciences and law. In three fields more than 10% of papers referenced a *New York Times* article in 2010: law (36% of papers citing the NYT), international relations (18%) and political science (11%).⁵

Table 1 – Distributions of NYT referencing and all US papers

Field	% of papers	% of NYT referencing papers
Social sciences	15	64
Law	13	51
Medical sciences	51	13
Science & Engineering	33	9
All Fields	100	100

This pattern of referencing highlights genre differences between the NYT and scholarly journals. One reason for the extensive citation is that the *New York Times* publishes about 75,000 articles a year, orders of magnitude more than a scholarly journal. The NYT covers “all the news that’s fit to print”; scholarly journals specialize in narrow topics. The NYT’s comprehensive topic coverage underpins the widespread citation pattern.

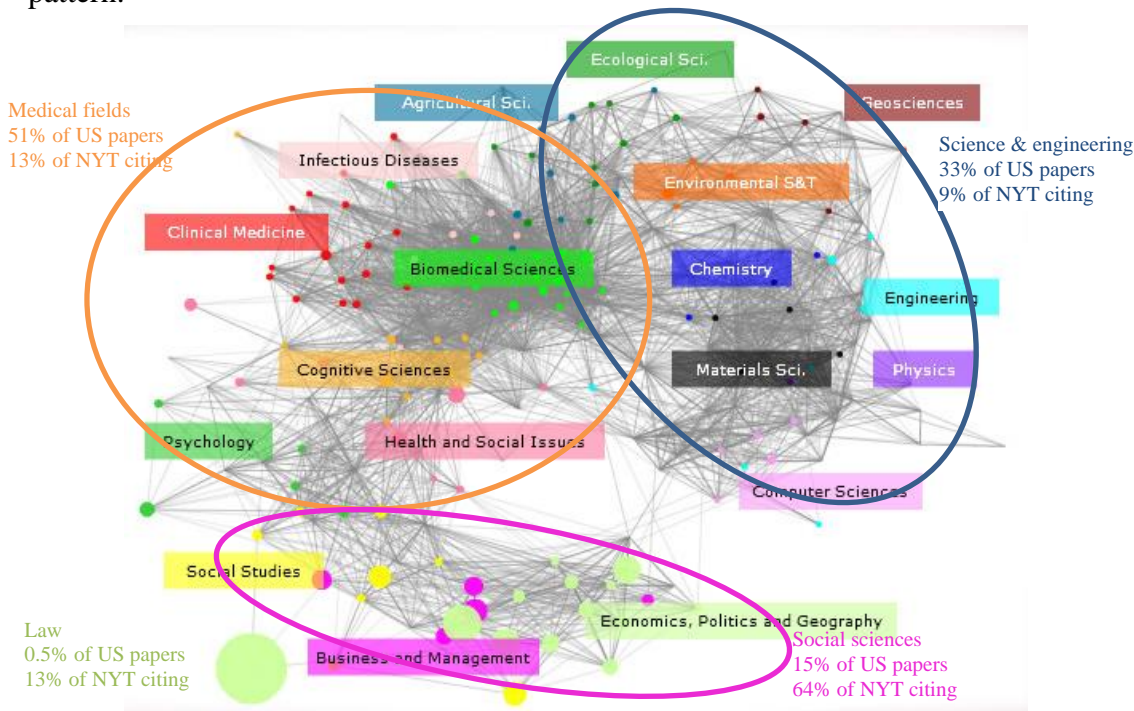


Figure 2 - Subject map of papers citing the *New York Times*

The extensive academic referencing of the *New York Times* only partly reflects general referencing of the press in scholarly articles. The NYT is referenced in academic papers more than three times as often as its nearest rival, the *Washington Post*, and more than seven times as much as the *Los Angeles Times* – Figure 3.

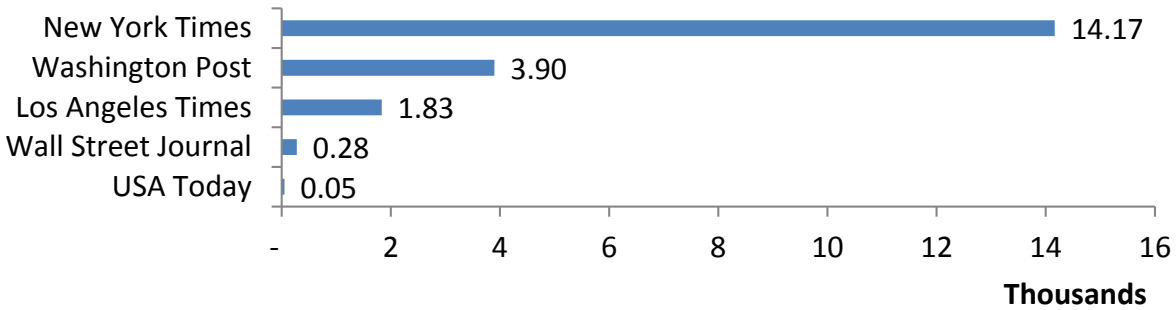


Figure 3 - Citations to leading US newspapers in 2010

The prestige and influence of the *New York Times* might explain the preference for NYT over other newspapers in scholarly referencing. This prestige is evident across a number of measures: circulation, Pulitzer prizes, use by opinion leaders and words in the Wikipedia entry. For each measure, Table 2 names the nearest competitor (or leader) and lists the value of the metric for both the NYT and the competitor. In the table we see that the paper dominates news coverage for US elites, shown by its leading position in the Erdos & Morgan (2011) annual survey of opinion leaders assessing the reach of media brands. The NYT reaches 58% of opinion leaders⁶ and the second leading paper, the Wall Street Journal, reaches 49%. The NYT website is visited monthly by 33% of opinion leaders, almost equal to the second place website, CNN at 28%. The *New York Times* leads on each prestige metric in Table 2 except weekday circulation.

The curious aspect of influence is that the NYT is so much more dominant in scholarly references than it is in the other metrics. The NYT/competitor ratio in dimensions such as circulation, opinion leader use and Pulitzer prizes ranges from 0.4 to 1.5. The NYT entry in Wikipedia is 1.7 times as long as that of the *Wall Street Journal*. Yet academic papers reference the NYT 3.6 times as much as they reference the nearest competitor, the *Washington Post*. The NYT's advantage in prestige may be magnified in academic referencing because unlike the other metrics, preferential attachment operates in referencing. Academics prefer to reference more prestigious authors and works (Camic, 1992; Evans, 2005; Hargens, 2004). Because referencing positions one's text in relation to predecessors, authors hope that well respected predecessors provide better positioning for the current work. The preference for prestigious predecessors is a form of preferential attachment responsible for the Matthew effect. Among academics, the scholarly literature is more respected than any other genre, including newspapers. Therefore, we would not expect newspapers to be referenced extensively in the scholarly literature because we would predict that authors might worry that references to newspapers would reflect badly on their texts. So if a newspaper is referenced at all, we would expect academics to preferentially reference the most prestigious newspaper magnifying underlying differences in esteem.

Table 2 - Newspaper Influence Metrics

Influence metric	NYT	Nearest Competitor	Competitor	Ratio NYT/nearest competitor
Scholarly references in 2010	14,165	Washington Post	3,898	3.6
Words in Wikipedia entry	8,958	Wall Street Journal	5,377	1.7
Sunday Circulation	1,352,358	Los Angeles Times	901,119	1.5
Opinion leader website visits	32.6	Washington Post	21.4	1.4
Pulitzer Prizes	26	Washington Post	19	1.4
Opinion leader readership	58.4	Wall Street Journal	49.3	1.1
Weekday Circulation	876,638	Wall Street Journal	2,061,142	0.4

Table 3 - List of sources for Table 2

Metric	Source
Wikipedia	retrieved webpage of Wikipedia about each newspaper, and counted total number of words, retrieve date: April 01, 2011
Sunday and weekday circulation	Average of a six month span from April to September 2010, source: http://www.boston.com/business/articles/2010/10/25/circulation_numbers_for_the_25_largest_newspapers/
Pulitzer Prizes	Counted number of Pulitzer Prize for Journalism in each year from 2001 to 2010, prizes for Letters, Drama, and Music are not counted, source: http://www.pulitzer.org
Opinion leader media usage	Erdos & Morgan (2011)

Why does the academic literature reference the *New York Times*?

In order to better understand the phenomenon of scholarly referencing of *New York Times* articles, citation contexts in a sample of NYT referencing articles published in 2010 were examined. 109 science and engineering articles and 210 social science articles citing the NYT were examined. These articles comprised all available hard science articles and a randomly selected 6% of accessible social science articles. For each article, the context surrounding the NYT reference or references was collected. The referencing contexts were compared and grouped in a process of midrange theory building from case studies (Eisenhardt and Graebner, 2007). Iteration refined and stabilized the category scheme that forms the basis for the discussion. The categories represent idealizations of actual referencing behavior. A single reference may partake of more than one purpose. Therefore, it was not possible to produce a precise frequency count of reference types. As Eisenhardt and Graebner point out, for a phenomenon-driven research question lacking plausible theory, such as this one, this type of theory building exercise is more suited to answering the “why” question than the “how often” or “how many” questions (Eisenhardt and Graebner, 2007, pp. 26-27).

The New York Times or New York City are studied

The *New York Times* is a notable institution in the United States and as such forms the subject of academic research, as in this paper. Web of Science indexes approximately ten articles a year with “*New York Times*” in their titles. Academic articles are written about the newspaper most often in the field of mass communications but almost as frequently in government law, arts & humanities, and information science. Also, the NYT corpus is used as a data source, for example in:

The Race and Class Privilege of Motherhood: The New York Times Presentations of Pregnant Drug-Using Women (Springer, K.W. 2010 *Sociological Forum*)

In this paper, *New York Times* articles are used to represent press coverage of pregnant drug-using women and the race of the women discussed in the articles is analyzed. The NYT provides raw data in fields as diverse as psychology, economics, computing and sociology.

Related to studying the NYT is the study of New York City. The city and its region play such a large role in the nation's cultural and economic life that the city is often the subject of research referencing the NYT as source material. About 50 NYT citing articles in 2010 contained "New York" but not "*New York Times*" in their titles. Examples are found in urban studies, history, cultural studies and biological and environmental sciences.

Studies of the *New York Times* and New York City are not unexpected. Therefore, we learn little of interest from these examples, except perhaps how broadly spread across fields are the studies. On the other hand, these examples account for only a small amount of NYT referencing, so the question of why scholars reference the NYT so heavily remains open.

A topic's importance is established using evidence of press coverage

The next reason for NYT referencing highlights differences between journalism and scholarship as genres. The press doesn't simply report; by reporting they also amplify. Schudson has argued that the press confer upon their subject matter public legitimacy, certifying importance (Schudson, 2003, 29). This contrasts with scholarship which serves to certify knowledge as reliable and in relation to social knowledge construct causal interpretations. Therefore, if an academic wants to demonstrate public concern for a topic to establish its importance, no amount of referencing to scholarly studies will make that point. However, press coverage does count as evidence of public concern. For example:

California schools became notorious for their overcrowding, poor physical conditions, and heavy reliance on temporary, modular classrooms (see, e.g., [NYT ref]). (Cellini, S.R. et al., 2010, Q. J. Econ)

Some of America's bestselling newspapers and magazines, including the New York Times, Time, Life, Newsweek, and Cosmopolitan tirelessly reported on Provo's public trials and his fate developed into a legal odyssey that influenced future interpretations of American treason law [refs]. (Kushner, B. 2010, J. Contemp. History)

NYT science coverage delights mathematicians and physicists when it touches on their enthusiasms:

A few months ago, a New York Times article [NYT ref] reported that the LHC dipoles unexpectedly behaved below specifications during first tests in 2008. This shows the interest that this pretty technical topic has risen not only in the scientific community, but well beyond, up to the headlines of newspapers. (Lorin C. et al. 2010, IEEE Trans. Appl. Superconductors)

NYT science coverage makes possible a kind of self-citation when a group cites an NYT article that featured its work. Two examples of this were found in 2010: an article entitled "Dynamics on the Way to Forming Glass: Bubbles in Space-Time" referenced NYT coverage of the group's research in a piece entitled "Anything But Clear", and an article entitled "Encapsulation of Capacitive Micromachined Ultrasonic Transducers Using Viscoelastic Polymer" referenced NYT coverage of the group's research in a piece entitled "An ultrasound that navigates every nook and cranny."

Referencing the NYT, along with other press, to establish the public importance of a topic is a strategy used by both scientists and social scientists, though scientific authors seem to use it twice as often. Overall about 10% of references are accounted for by this motivation. This type of referencing might be classified as genre typical. There is a consensus that newspaper coverage signifies public interest and when public interest enters an academic argument, newspapers are an appropriate reference. The NYT is a newspaper with comprehensive news coverage and so may well be included in a list of newspapers.

Specificity is introduced

Academic writing is characterized by the use of generalities and abstractions. Nominalization creates “higher and higher order abstractions which provide conceptual objects that populate the intellectual landscape of scientific specialities. The nominal abstractions are increasingly removed from concrete experience . . .” (Bazerman, 1998, 19, summarizing Halliday). Social sciences construe experience in abstract, hypothetical, idealized and generic terms upon which technical taxonomy is built (Wignell, 1998; MacDonald, 1994). This serves as the scaffolding on which knowledge of processes, relationships and causes is constructed. In contrast, journalism is storytelling about the who, what, where, when and why of events (Manoff and Schudson, 1986). Newspapers report events and the people involved at a particular time and place. Both genres can leverage the other. When journalists have recourse to causal explanation, they can bring in academics as experts.⁷ When social science moves from abstractions to specifics, one approach is to reference the NYT. Often an NYT reference marks the appearance of something concrete among the abstractions.

Specificity characterizes the words spoken by a person. In addition to specificity, spoken words introduce color into the text. If spoken by a person shaping the course of events, quotes can also advance an argument. Journalists often quote specific people, and NYT journalists have access to famous people. Academics, though they quote each other’s written text, rarely reproduce words spoken by another. When they do, one method is to pull a quote from the NYT. For example:

In an attempt to encourage development of creative solutions to prevent the approaching crisis, the former Saudi Arabian oil minister warned that “The Stone Age didn’t end for lack of stone, and the oil age will end long before the world runs out of oil” [NYT ref]. (Abramson, M. et al. 2010, Plant Science)

French President Nicolas Sarkozy publicly mused, at the onset of the crisis, that “a certain idea of globalization is dying with the end of a financial capitalism”, yielding a seemingly unambiguous ideological conclusion: “Self-regulation, to fix all problems, is over. Laissez-faire is over” (quoted in [NYT ref]). (Brenner, N. et al. 2010, Antipode)

Another type of specificity is reference to events: the bridge collapse in Minnesota, ricin attacks in the subway, Lehman Brothers bankruptcy. We know about these events through the news, and the news has made them common knowledge. Because one of the functions of news is to create common knowledge (Schudson, 1978), and once something is common knowledge it no longer needs to be explicitly referenced (Latour and Woolgar, 1979, p. 76; Garfield, 1975), referencing of news is suppressed. Between unknown and common knowledge lies a zone of reported events whose obscurity prompts explicit source referencing when they are brought into an academic text. For example:

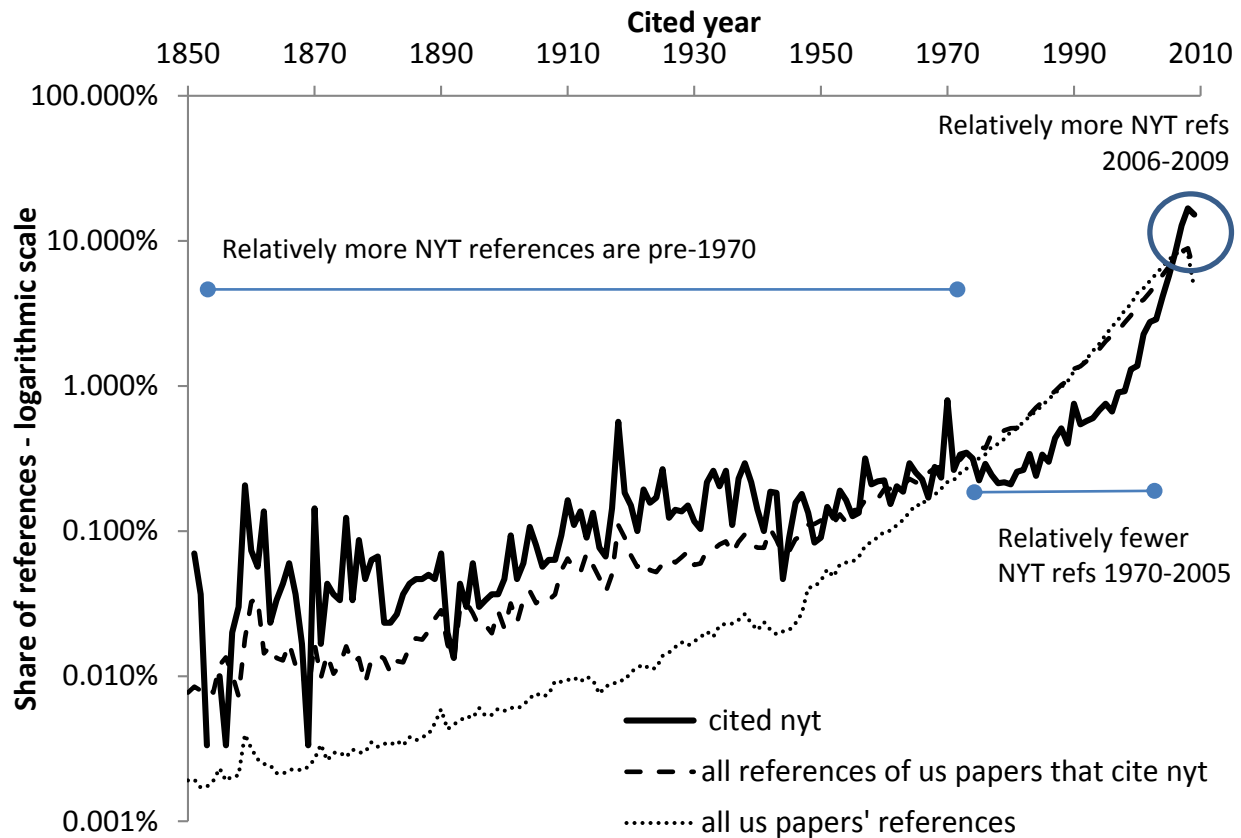
As of June 9, BP has used over 1 million gallons of Corexit oil dispersants to solubilize oil and help prevent the development of a surface oil slick [NYT ref]. (Anderson, B. et al. 2010, Environ. Sci. Technol.)

Claims of “infringing activity” could be used pretextually to block access to political critics—as in Russia, where the police asserted copyright enforcement when they raided an environmental group and confiscated computers containing allegedly pirated Microsoft software.[NYT ref] (Microsoft has subsequently granted a blanket license to such groups.) (Seltzer, W. 2010, IEEE Secur. Priv)

The currency of these examples is representative. One aspect of the generality and abstraction with which academic knowledge is written is a kind of timeless quality (see Knorr-Cetina, 2011). Academic social knowledge is slow knowledge; lengthy periods of research are followed by weeks and months of writing, the gap between submission and publication, the many years that pass between publication and recognition by the scholarly community. This leisurely pace contrasts with the daily deadlines journalists face in their time sensitive genre. When academics reference very recent events, events so recent that they have not been absorbed into the scholarly literature, the NYT can be used.

Therefore, the age profiles of references to the NYT and to the scholarly literature differ. Authors' NYT references are both newer and older than their references to journal articles. In papers that cite the NYT, the NYT accounts for 10% of all references to material published most recently, i.e. current year, and 10% of references published in the 1800s. But NYT referencing accounts for only about 2% of references published between 1980 and 2003. Figure 4 plots the distribution of references over cited years for NYT references, and all references in all papers. The figure shows that relatively more references to the NYT are very recent (2006-2009) as compared to references to journal articles. In accord with the timeless quality of scholarly writing, the use of journal articles as references declines more gradually with age of article than does the use of NYT articles so that amongst material published from 1970-2005, relatively more journal articles are cited than NYT articles. However, pre-1970 the situation reverses again so relatively more NYT references are older than 1970 as compared to journal article references. The modal year of cited works is 2007 overall, but 2008 for NYT references and for all references in NYT-citing papers (2009-2010 citing papers).

Figure 4 - Distribution of references across cited years - NYT versus all references



Though aspiring to a timeless quality, ironically the scientific and social scientific literature does not have much use for work older than 40 or 50 years. However, as a record of events the NYT can be used as a primary source of historical information, and with the archive online that source is more accessible than history books. Thus the NYT is used as a source of information on events in the late 1800s and early 1900s by non-historians. Art, literature and history are the fields with a predilection for using pre-1950s sources, and among their old sources, the NYT is prominent. However, such referencing is found across fields.

In referencing events and quotations, the NYT is used as a primary source. This usage is broader than instances in which discrete events or quotes are discussed. For example:

Fuel consumption cost is estimated to account for more than 60% of the vessels' operating costs and therefore, ocean carriers have taken almost unprecedented immediate measures to slow ships to economic speeds of 20knts from 25knts, a practice called "slow steaming". Moreover, the ocean carriers are stressing the increased importance of schedule integrity and the ensuing benefits to the environment [NYT & trade press refs], along with their devotion to slow steaming operating policies [trade press ref]. (Boile, M. et al., 2010, Transp. Res. Record)

Here the NYT is being used as a primary source but the discussion is not quite about a specific event. The high rate of NYT referencing in international affairs likely reflects the value of the NYT as a primary source due to the depth of foreign affairs coverage as well as the many decades of coverage in their archives. So for example the phrase "cold war" occurs relatively frequently in the titles of NYT referencing papers (13 times in 2010) and papers in the journal *Diplomatic History* often contain NYT references. Similar usage is found in articles discussing the financial crisis. These various types of specificity account for 40-60% of NYT referencing.

Reference is indistinguishable from an academic reference

A paragraph level shift from the abstract to the concrete often marks an NYT reference, whether a quote is introduced, the implications of an event discussed, or some broader happening is interpreted; the NYT is used as a primary source. At times however the NYT is referenced and the language remains abstract and general; one would not guess a *New York Times* article was being referenced from looking at the citation context.

For example, an array of optimally aligned microrods with semicircular cross-sections may be mounted on a frame. Upon exposure to sunlight the frame would be propelled forwards, like a solar sail [NYT ref], and translated sideways, as a result of lift. (Raisanen, A.D. et al. 2010, Nature Photonics)

This stigma manifests itself through narratives of indeterminacy, confusion, and deceit, wherein bisexual persons are cast as being unable to choose their identity or, worse, lying about their "true" identity. [NYT ref] (Bostwick, W.B. et al. 2010, Am. J. Public Health)

When specificity is lacking, the NYT will often be co-referenced with scholarly journals.

This technology is now actively pursued for electric vehicle applications (HEV and EV). However, major challenges in implementing the LIB technology for vehicle applications are the safety and environmental concerns arising from the currently used expensive LiCoO₂ cathode [NYT and 2 journal article refs]. (Balaya, P., 2010, Energy Environ. Sci.)

Several previous works have shed some understanding on the prevalence of Braess's Paradox. On the empirical side, there has been a small amount of anecdotal evidence in the transportation science literature suggesting that Braess's Paradox has occurred in certain road networks [NYT⁸ and 2 journal article refs]. (Roughgarden, T; Valiant, G. 2010, Random Struct. Algorithms)

The quintessential example of NYT journalist-written material being referenced exactly like an academic study concerns the work of Michael Barbaro and Tom Zeller, Jr. in breaking the anonymization of an AOL data file in 2006 (Barbaro & Zeller, 2006). The impossibility of anonymization in large data sets is a topic of increasing concern in the computer science and law literatures. The Barbaro and Zeller article is a foundational contribution to that literature and is often cited giving authorial credit, as is common when citing academic work but not when citing NYT articles. The citation pattern to the article is not that of a journalistic piece – citation in the year or two after publication followed by swift oblivion - but that of a highly cited academic piece cited 10 to 15 times a year every year since publication.⁹

An author referencing the NYT to establish public interest in a topic, or to move from the abstract to the concrete, is taking advantage of genre differences between scholarship and journalism and therefore implicitly acknowledging that scholarship and journalism differ. In cases where no shift in specificity is made and the NYT is co-cited with journal articles, the author does not acknowledge any genre differences between the NYT

and scholarship. Such references account for 20 to 30% of NYT referencing, somewhat higher in science and engineering fields than in social sciences.

Citing academic writing in the NYT

Professors publish in the NYT and journal articles reference these pieces. Paul Krugman is not only a professor at Princeton and the London School of Economics, but also a columnist for the *New York Times*, a position he held at the time he won the Nobel Prize in economics. Others write single pieces in the NYT Magazine. The Magazine accounts for about 3% of cited items and 9% of citations.¹⁰ For example, University of Chicago economist Milton Friedman is the most cited NYT author, cited over 860 times in total. In 1970, Friedman published in the NYT Magazine an article entitled: “The Social Responsibility of Business is to Increase its Profits.” This paper was little noticed until the past decade when corporate social responsibility became a hot area of management research. In recent years, the Friedman piece is often cited in corporate social responsibility papers when they frame the field in the following fashion:

Friedman argued that corporations do the most good for society by focusing solely on shareholders and making profits (Friedman, 1970). Others however argue that corporations have broader societal responsibilities (many other authors referenced).

The Web of Science indicates that in 2010, 20% of papers with “corporate social responsibility” in their titles referenced the Friedman 1970 article in the NYT Magazine. The article was republished in a book in 2007 but only one paper referenced the book version in 2010.

Another highly cited piece in the *New York Times Magazine* written by a professor was an article reporting the results of the Stanford prison experiment by Philip Zimbardo, Stanford social psychologist. In this experiment a group of students were divided into prisoners and guards for two weeks; the experiment was halted after six days due to the extreme cruelty that emerged. Zimbardo published the results of the experiment in 1973 as “Interpersonal dynamics in a simulated prison” in *International Journal of Criminology & Penology*. In the same year, he published “The mind is a formidable jailer: A Pirandellian prison” in the *New York Times Magazine*. The NYT Magazine version has been cited 132 times. Though the NYT piece is cited only 20% as much as the academic journal version, the two citation records show the same time trends

One reason professors write for the NYT and reference the NYT may be that the NYT takes an academic approach to news. During the 1970s managing and then executive editor Abe Rosenthal shifted emphasis “from conventional fast-breaking news stories to more thoughtful and descriptive articles on social and demographic trends, ideas, literary controversies and, lately, white-collar crime” (Anonymous, 1977). This approach is conducive to scholars using the NYT as a primary source. The paper is not just academic-like in its approach; it relies heavily on academics as sources. *New York Times* stories frequently quote professors, and many stories discuss the results of academic research - 24% of *New York Times* articles within the past 12 months included one or more of the terms: university, professor or study.¹¹ In cultivating an academic approach, the NYT did not become an academic journal; rather it differentiated itself among newspapers. In doing so, it became the most useful newspaper for academics, who when using it as a source of data, or in justifying a study of the NYT, do so not by mentioning the NYT's intellectual character, but rather by positioning the NYT as the quintessential newspaper, the newspaper that sets the agenda for other news media. This aligns with findings of journalism scholarship that the NYT often does set the news agenda in the United States (Golan, 2006; Shoemaker et al., 1996).

Discussion

The *New York Times* is referenced surprisingly often in the scholarly literature. 1.25% of US papers published in 2010 referenced the NYT, accounting for 15,000 references. NYT referencing has grown faster than number of papers since 1980, with growth accelerating after 2006. Papers in all fields reference NYT

articles, though law exhibits the highest rate of referencing, followed by social sciences, medical sciences then science and engineering fields. The NYT is referenced far more often than other newspapers, perhaps because it has cultivated a serious, intellectual approach to news for over 100 years.

Narrowing the focus to science, engineering, social sciences and humanities to examine the context in which references occur suggests the NYT is a flexible resource when used in constructing academic arguments. Five broad reasons scholars reference NYT articles were identified. First, scholars studying the *New York Times* or New York City naturally use the NYT as a source. There are about 60 of these papers a year. Second, scholars cite press coverage to establish public interest in their topic. In these contexts the NYT is usually co-cited with other press. Such papers account for about 20% of science and 10% of social science and humanities NYT references. Third, scholars can use the NYT as a source of a quote or information on an event, recent or historical. Here writers are leveraging the differences between the scholarly and newspaper genres by using the newspaper to import specificity and concreteness into a more abstract discussion. This usage accounts for about 40% of NYT referencing. Fourth, about 20% of the time in science and 10% in social sciences, NYT referencing is identical to referencing of journal articles. Finally, articles in the NYT Magazine written by Milton Friedman and Philip Zimbardo are often cited. There are even a few self-citations.

The first challenge in interpreting NYT referencing is its invisibility. The bibliometric literature would be an obvious home for an examination of referencing. However, bibliometricians largely work with material indexed in the Web of Science. Most of the NYT is "non-indexed" and non-indexed material has been explored primarily to find important academic material not indexed such as books, conferences or journals (Butler & Visser, 2006; Nederhof et al. 2010). Those examining the relationship between science and media also miss the phenomenon. The study of public understanding of science takes media coverage of science as its subject. Thus they look at the reverse phenomenon: newspaper articles about science, not science's use of newspaper articles. Those examining the effect of media on scholarship explore changes in scientific practice brought about by an increasing orientation to obtaining media coverage of research (see for example Rödder et al, 2012), not how scholarship increasingly makes use of newspaper articles. NYT referencing is invisible both to communities examining referencing and to those looking at the relationship between media and science.

The science studies literature exhibits a longstanding concern with demarcation documented in, for example, Merton's norms and boundary work (Gieryn, 1983; Lamont and Molnar, 2002). Since the press, even the *New York Times*, is not academic literature, science studies thinking about boundaries might be relevant. Gieryn reported sarcasm and amusement accompanying scientists' accounts of trying to replicate Pons and Fleischmann's cold fusion results using the only available sources of information, CNN and newspapers including the *New York Times* (Gieryn, 1999, p. 222). Clearly, this was science as it should not be done. In contrast, the authors referencing the NYT seem to be unaware of breaching any supposedly sacred boundary. They are found treating the NYT on a par with scholarship as a creator of social knowledge. Such casual indifference is not easily reconciled with a framework based on heightened awareness of difference.

The boundaries between scholarship and other knowledge enterprises are maintained to enhance the "embodiment of knowledge as a source of worldly power" (Fuller, 1991, 301) and the integrity of the knowledge produced (Weingart, 2001). That engagement with the NYT threatens neither the power nor integrity of scholarship is suggested by the high citation rates of both the Friedman and Zimbardo NYT pieces as well as their journal articles; by Paul Krugman winning the Nobel Prize in economics while writing a column for the NYT; and by a study establishing that NYT coverage enhanced the citation rate of covered journal articles. Phillips et al. (1991) took advantage of a strike at the NYT during which a limited "edition of record" was published, but not sold. Articles in the *New England Journal of Medicine* (NEJM) selected by the NYT for coverage were studied. Citation rates of NEJM articles covered in editions that were distributed were compared with citation rates of NEJM article covered in editions not distributed due to the strike. NEJM articles publicized by the NYT were more highly cited in each of the 10 years after publication than the control articles. The largest difference was in the first year after publication during which the articles publicized by the NYT received 72.8% more citations.

The image of a homogenous entity called science with a fragile sense of power and integrity defending rigid boundaries serves us less well in framing scholarly engagement with the NYT than do conceptions of a heterogeneous, changing enterprise. Krugman's column and Friedman and Zimbardo's articles in the NYT Magazine serve as reminders that social scientists and humanists work in more than one genre, not just journal articles but also books and what might be termed "enlightenment literature" (Hicks, 2004). Enlightenment literature represents knowledge reaching out beyond the scholarly community (Nederhof and Zwann, 1991, p. 335). Burnhill and Tubby-Hille found that in the UK "projects in education [were] reaching practitioners through such periodicals as the *Times Education Supplement*, with researchers in sociology, social administration, and socio-legal studies publishing in such periodicals as *New Society* and *Nursing Times*" (Burnhill and Tubby-Hille, 1994, p. 142). Membership journals, through which scholars speak to a broad scholarly audience outside their specialty, can be viewed as a type of enlightenment publishing. American membership journals are indexed in the Web of Science and often exhibit high rates of NYT referencing, examples include: *Phi Delta Kappan*; *PMLA* - the journal of the Modern Language Association of America; *Academic Medicine* - the official, peer-reviewed journal of the Association of American Medical Colleges, and *Daedalus* - the journal of the American Academy of Arts and Sciences. Enlightenment publishing is widespread (and becoming more so with the advent of blogs) but traditionally has been removed from consideration in evaluation and studies of science and scholarship. Recent work bringing into focus traditional forms of enlightenment literature (Osrecki, 2012), as well as interest in the role of blogs and tweets in science, reminds us that any realistic understanding of scholarship must recognize its heterogeneity.

The idea of scholarship as a heterogenous evolving entity is reminiscent of Mode 2 (Gibbons et al., 1994) or post normal science (Turnpenny et al., 2010). Homogeneous science with a rigid boundary evokes Mode 1 associations while increasing engagement with the NYT aligns with elements of Mode 2. Mode 2 scholarship is produced in the context of application, is transdisciplinary, organizationally diverse, socially accountable, and aims to be socially useful as well as being considered high quality as assessed by peers. Mode 1 research in contrast is disciplinary, university based, autonomous and assessed only by peers. Increased referencing of the NYT signals increased recognition by scholars that sound knowledge is produced in diverse institutions beyond universities, which aligns with the organizational diversity said to characterize Mode 2 research. NYT references are more recent than their accompanying journal article references because information on current events not yet analyzed in academic papers is gleaned from the NYT. This is consistent with scholarship drawing closer to current concerns, which would likely characterize work produced in the context of application that values social accountability.

This is also consistent with a scholarship of society comprising porous interacting genres creating a complex ecology of public knowledge. Traditionally science was autonomous, not porous. Knowledge was built upon previous knowledge in the same area. This self-sufficiency was evidenced by high rates of internal referencing, that is relatively low rates of referencing to material not indexed in the Web of Science. More porous scholarship exhibits high rates of referencing to material outside the core journals indexed in the Web of Science. NYT referencing seems to represent this more open approach, even in non-social science and humanities papers – i.e. science, engineering and medicine. Science, engineering and medicine papers referencing the NYT reference all types of material outside the core scientific journals at a higher rate than other papers. In this characteristic, NYT-referencing science, engineering and medicine papers resemble social science and humanities papers, all of which heavily reference material outside the core journals. Articles in science, engineering and medicine journals that reference the NYT are renegades that are more open to influence from outside the canon. Social science scholarship is in general more porous and seems to find past journal articles insufficient foundation upon which to advance knowledge without supplement from a broader, more heterogeneous set of less vetted sources.

The contrast between porous and autonomous knowledge enterprises extends to the journal level. Journals with high rates of NYT referencing often have fairly low impact factors. Comparing such journals with high impact factor journals in their field suggests a contrast between journals that describe themselves as

concerned with currency, policy, a position around issues or topics and an audience that includes practitioners or decision makers, against those that emphasize quality, peer review and position themselves in terms of scientific fields. Examples of journals with high rates of NYT referencing include:

- *Energy Policy* - journal addressing issues of energy supply, demand and utilization that confront decision makers, managers, consultants, politicians, planners and researchers;
- *Independent Review* - interdisciplinary economics journal devoted to the study of political economy and the critical analysis of government policy;
- *Health Affairs* - health policy issues of current concern;
- *Perspectives in Biology and Medicine* - interdisciplinary scholarly journal that places important biological or medical subjects in broader scientific, social, or humanistic contexts;
- *Globalizations* - explores new, multidisciplinary meanings of globalization in the widest possible space for discussion of alternatives to a narrow economic understanding.

Such transdisciplinary, policy relevant journals engaged with an audience including more than scholars would seem to exemplify a porous Mode 2 scholarship. Peer reviewed, highly cited journals positioned in relation to fields of scholarship would seem to exemplify an autonomous Mode 1.

The scope of the Mode 2 interpretation must be carefully delineated. The contrasting types of journals are found in some fields – economics and public health for example - but not others. Business and management journals all seem to have low rates of NYT referencing, presumably because the subject matter engages less with broader societal issues than economics or public health. In political science and international affairs all journals have high rates of NYT referencing¹² presumably reflecting the close relationship between the press, public and politics that forms the subject matter of much of scholarship on mass media. Similarly, journals in media and communication studies often reference the NYT. Understanding the extremely high rate of NYT referencing in law journals would require an understanding of law scholarship itself, an understanding that awaits development.¹³

Mode 2 also involves a disputed claim to change over time. Although the rate of NYT referencing is growing swiftly, motivating this study in fact, the enlightenment literature is not new, nor are the journals that heavily reference the NYT. There is evidence that journals may go through phases emphasizing NYT referencing more heavily at some points and scholarly journals more heavily at others (Taubert, 2012). So in the absence of more historical data, it would be risky to claim that NYT referencing has never been as high as it is now. The historical development of porous scholarship would be of interest, especially in the sciences and engineering. Was there a time when no papers in scientific journals referenced outside the core journal set? Have scientific journals become more open to more porous papers over time? Was this development responsive to world events or to concerns of the scientific community?

The research reported here suggests additional productive lines of inquiry. To fully understand the role of the NYT in scholarship we need to study the referencing context two or three decades ago to identify changes over time. We need to incorporate medical sciences and law into the referencing analysis. We need to study more generally the move between specificity and abstraction in academic papers and assess the role of NYT referencing in relation to other ways to make that move. We need to explore whether the topics of NYT referencing papers differ systematically from topics of papers that do not reference the NYT. More generally, we need to recognize the existence of porous scholarship and develop as powerful an understanding of its workings as we have for autonomous scholarship. Of particular interest is not which type of scholarship has greater academic influence – porous or autonomous – the higher impact factors of autonomous journals suggest the answer to that question. Rather, tracing the connections between scholarship and cultural and political developments would answer the question of whether porous or autonomous scholarship has more influence on culture and politics. Presumably, those that engage with society as suggested by NYT referencing would also like their work to influence society. If high academic impact translates into respect beyond the academic community, academic respect might be the most powerful resource in influencing societal debate, more

powerful than engaging with societal issues in the construction of the scholarship. Then porous scholarship might be a dead end, its low academic impact guaranteeing limited societal influence. On the other hand, influencing society may require close alignment between issues and scholarship achieved only in a more porous scholarship. But if that alignment in turn compromises the integrity of the knowledge as suggested by Rödder et al (2012), then there is a fundamental weakness at the heart of the knowledge society.

Conclusion

In this study we investigate the relationship between the scholarly literature and the *New York Times* as expressed through references in journal articles. We find that NYT referencing is extensive and that growth in NYT referencing has accelerated in recent years, probably due to easier access to NYT articles over the Internet. Referencing is widespread, though most intensive in law, international relations and political science. Nevertheless, academics have not become journalists and journalists have not become academics. Examining the contexts of NYT references, we find authors most often leveraging the differences between the scholarly and newspaper genres to advance their arguments. Sometimes the NYT is referenced because the NYT is the subject of the research. Sometimes New York City is the subject, which leads to extensive use of the NYT as a source. More often, authors seek to establish the importance of their topic by using press coverage as evidence of public concern. The *New York Times* is also used as a primary source, for example in discussing a recent event or inserting words spoken by an influential person. Perhaps half of NYT referencing uses the NYT as a primary source. Authors who use the NYT for evidence of public concern and to support their turn to specificity are leveraging differences between scholarship and journalism as genres of social knowledge making. In contrast co-citing with journal articles or citing academics writing in the NYT are patterns that seem to violate long standing concerns with demarcation among scholars. These patterns can be understood within a framework that recognizes that social scientists and humanists work in more than one genre, one of which is enlightenment literature. That the *New York Times* reigns supreme in the enlightenment literature testifies to the success of 100 years of strategic development that explicitly targeted academia at key points. The *New York Times* and academia, though distinct, have become symbiotic enterprises within the ecology of public knowledge.

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¹ With the exception of the relationship between economists and markets, which has been studied.

² Source Fulltext Sources Online – FSO – database.

³ The same breadth would be seen in a map of the world; about one-quarter of papers citing the *New York Times* do not list a U.S. author.

⁴ The number in science and engineering fields is somewhat exaggerated because for journals with multiple field designations, the first field is used. Some law, humanities or social science journals thus appear in science fields, for example *Journal of the History of Biology*, which appears in biology. Information science and operations research appear in computing, where others would classify them as social science (library science) and management. Such misclassifications account for about 20% of the science and engineering papers on the map.

⁵ US papers published in 2010 and indexed in the Web of Science.

⁶ Opinion leaders, for the purpose of this study, are defined as those individuals whose influence on business, social, political, environmental and educational issues far exceeds their numbers in the population. They exercise far-reaching and powerful influences on the opinions of their fellow Americans by framing and defining the issues that will largely determine the future course of the nation.

⁷ This contrasts with discussion of motivation, which journalists will ascribe on their own authority (Carey, 1986, 177).

⁸ Title of NYT article: What if they closed 42nd Street and nobody noticed?

⁹ WoS citation analysis conducted January 16, 2012.

¹⁰ This is an undercount as not all references contain the string “mag” which was used to produce these estimates.

¹¹ A search of the *New York Times* was undertaken on ProQuest Newstand New Platform on July 27, 2011. Searching for “the” returned 75,596 results, assumed to be the total article count. Within these results, a search of the full text for “university or professor or study” returned 18,294 entries, or 24.2%.

¹² Except *International Organization*, the leading international relations journal, this journal's guidelines for contributors bans mention of newspaper or magazine articles in the reference list. Relevant information, which does not include article title or author, is to be placed in footnotes. This means that the references to newspapers and magazines are not indexed in the Web of Science. This journal is enforcing the clear demarcation between scholarly and newspaper references that science studies literature might lead us to expect. However, this journal is the exception.

¹³ Though see Latour, 2010.