



Commentary

The Role of Professional Journals and Societies in the Future of a Field: A Reflection on the Partnership Between the *American Journal of Epidemiology* and the Society for Epidemiologic Research

Kristen A. Hahn* and Sandro Galea

* Correspondence to Dr. Kristen A. Hahn, 715 Albany Street, Boston, MA 02118 (e-mail: kahahn@bu.edu).

Initially submitted May 20, 2015; accepted for publication July 10, 2015.

On this, the 100th anniversary of Johns Hopkins Bloomberg School of Public Health, we take the opportunity to reflect on the ties between the School, the *American Journal of Epidemiology*, and the Society for Epidemiologic Research. We discuss briefly the intersection of the School, the *Journal*, and the Society throughout their histories, with the aim of providing some insight into how the *Journal* and the Society have contributed to the evolution of the field. In so doing, we articulate the challenges that the *Journal* and the Society jointly face today, with an eye to finding opportunities in these challenges that can be helpful in coming decades.

academic journal; history; professional society

Abbreviations: *AJE*, *American Journal of Epidemiology*; JHSPH, Johns Hopkins Bloomberg School of Public Health; SER, Society for Epidemiologic Research.

In June 1916, Dr. William Henry Welch, a bacteriologist and the first dean of Johns Hopkins School of Medicine, founded the Johns Hopkins School of Hygiene and Public Health, which is now known as the Bloomberg School of Public Health (JHSPH). Established in response to a conference sponsored by the Rockefeller Foundation, the School was the first independent, degree-granting institution for research and training in public health. Founded as a combination of the British and the German public health training models that bridged public health practice and basic science research, JHSPH established the standard for American public health education. By 1922, three other American schools of public health had been founded in the same model.

Shortly after founding JHSPH, Dr. Welch decided that the School, as a leader in the field, should launch a scientific journal to communicate the research conducted by the public health and hygiene faculty. Welch believed his new journal, the *American Journal of Hygiene*, would complement the already-established *American Journal of Public Health* by inviting publications that focused on developing a base of scientific knowledge needed for effective disease prevention and public health advancement. From its inaugural issue in 1921, the *American Journal of Hygiene* featured publications

that closely mirrored the organization of JHSPH and mostly represented laboratory sciences, with only 25% of papers in the first decade coming from the fields of epidemiology, biostatistics, chemical hygiene, physiological hygiene, and public health administration combined (1). After World War II, public health scholars and advisors shifted their attention from infectious to chronic diseases. However, the *American Journal of Hygiene* continued to focus almost exclusively on infectious disease. In the time period between 1955 and 1965, numerous specialty journals were established that overlapped with the traditional areas of emphasis in the *American Journal of Hygiene*. In 1964, an advisory board from JHSPH, seeing that their *Journal* was weakening and losing readership, saw a future in the rapidly growing and underrepresented field of epidemiology and changed focus with a new title, *American Journal of Epidemiology* (*AJE*). As the editor Dr. Neal Nathanson explained in his editorial from 1965, "There is no journal in the English language which has the word epidemiology in its title. Epidemiology is both a method and a substantive field, and epidemiologic papers appear in a wide variety of medical journals. This is as it should be; nevertheless, it is believed that a journal devoted to epidemiology will fill a distinct need" (2, p. 1). Since refining its

focus, the *AJE* has grown to its current state, with 1,463 submissions and 393 papers published in 2014. JHSPH maintains its sponsorship of the *Journal*, and though the editor-in-chief is a member of the faculty of the Department of Epidemiology, the *Journal* exists with editorial independence and, as stated in its mission, is “devoted to the publication of empirical research findings, opinion pieces, and methodological developments in the field of epidemiological research” (3).

The oldest professional society in epidemiology, the American Epidemiological Society, was founded in 1927. However, American Epidemiological Society membership was predicated on strict criteria: New scholars could only be nominated when existing members retired, and they were subject to rigorous approval standards. As the field of epidemiology grew in the 1950s, the American Epidemiological Society was unable to accommodate the growing number of young epidemiologists. Therefore, 3 leading epidemiologists, Milton Terris (New York Medical College), Abraham Lilienfeld (JHSPH), and Brian MacMahon (Harvard University School of Public Health) formally established the Society for Epidemiologic Research (SER) (4) by writing a letter to *AJE* stating that the goal of the organization and the first annual meeting (May 10–11, 1968) was “for epidemiologists to get together to discuss their work in a setting which fosters informal as well as formal discussion. It is hoped also that the younger people will have a chance to meet, argue and consult with the veterans in the field. A major aim is to achieve cross-fertilization of disciplines” (5, p. 266). In 1975, Neal Nathanson initiated the Society’s official sponsorship of the *Journal*. Society members began to receive a subscription to the *Journal* and its annual companion journal, *Epidemiologic Reviews*. A relationship was struck whereby *AJE* agreed to publish abstracts of the Society’s annual meetings and the SER was represented on the *Journal*’s Board of Overseers (6). The Society’s sponsorship of the *Journal* has remained largely unchanged over the past 40 years. The relationship has served both partners well, reinforcing the growth of each. Over the past several decades, publication in the *AJE* continued to be the premier mark of epidemiologic publishing success, while the SER became the largest of the epidemiology professional associations. During this period, the Society and the *Journal* continued to enjoy a close and mutually beneficial relationship with extensive crossover between members of the Society and editors and authors for the *Journal*. In 2014, the SER had 1,650 members, 40% of whom were students or postdoctoral fellows, and the majority of individual subscribers to the *AJE* are members of the SER.

THE PRESENT: SUCCESSES AND CHALLENGES

Today, members of the SER continue to have subscriptions to the *AJE* and *Epidemiologic Reviews* as part of their membership fee, together with access to a variety of other opportunities to promote epidemiologic scholarship, including SERnews, SERplaylists, and SERexperts. The SER-*AJE* contractual agreement also allows SER members to receive reduced page charges when publishing in the *AJE* and a discount on books from the *Journal*’s publisher, Oxford University Press. In addition to these tangible benefits, members take advantage of a variety of informal opportunities that

can advance their links to the *AJE*. The SER’s annual meeting aims to promote informal networking among members both junior and senior, and mentoring is encouraged through events like alumni meetings, Student and Postdoc Committee activities, and engagement. The dyadic mentor-protégé and peer-oriented relationships enabled by membership in the SER aim to encourage collaboration and formation of new research partnerships. There is ample evidence that these types of partnerships may be particularly important for career-building among young investigators (7, 8). In addition, the opportunities afforded by the Society to form collaborations and opportunities for debate, testing of new ideas, and provocation can lead like-minded researchers to refine current hypotheses and develop and improve grant proposals, a major benefit in the current funding environment (9).

The present, however, also poses several looming challenges for both the *AJE* and SER that arise principally from the increasing digitalization of scholarly activities. Beginning at the turn of the 21st century, the digital revolution started to change how the academic enterprise operates. To the good, *Journal* submissions and manuscript processing shifted from paper to digital, helping to increase publication speed. Greater global access to information set about a subtle, but not inexorable, shift from viewing knowledge as a private property to an open, globally accessible commodity, which offers the opportunity to engage new stakeholders and expand existing networks, particularly to traditionally underserved locations (10). As a younger generation emerged with comfort and ease in online communication, digital publication of ideas has started to afford timely and efficient ways to present new ideas and to receive rapid peer feedback. This has now resulted in a previously unknown capacity to test ideas in a public forum without necessitating physical presence.

These developments run the risk of rendering obsolete both professional journals, which are published by large publishing houses, and professional societies (11), whose central purpose is providing access to these journals and an opportunity for researchers to convene on a regular basis. Three main aspects of this changing landscape threaten journals and societies.

First, this democratization of knowledge stands, in many respects, in contrast to the model of journal publication that has been dominant over the past 40 years. To this day, manuscripts are published periodically and tied to the journal in which they were published, with each new citation of a paper improving the impact factor and thereby increasing the likelihood that the journal will be chosen for a library subscription. Since the start of the digital revolution, papers have become increasingly separated from the journals that contain them, and there has been a disconnect between manuscript citations and journal impact factors (12). Several online journals have been founded, some of which have thrived, that divorce paper publication from any particular journal issue, instead publishing papers after they have been through the peer-review process.

Second, journal publication financial models have changed dramatically. Individual subscribers are becoming less of a factor in the financial well-being of journals, with publishers bundling subscriptions to prestige journals for universities and other large institutions. This means that most epidemiologists,

who are almost all linked to an institution that has institutional subscriptions, no longer need personal journal subscriptions and, indirectly, no longer need society membership if its principal benefit is reduced-price or free journal subscription. This may be particularly true among younger members who read manuscripts on paper less frequently and for whom periodic publication of journals may be ever less relevant.

Third, the advent of open access journals—those that do not charge by subscriber but instead require authors to contribute publishing fees or processing charges—also represents a threat to existing subscriber-based journals. The number of new open access journals has increased from a few dozen in 1993 to more than 5,000 in 2009 (13), which has offered greater accessibility for people in low-income countries (14) without much of a loss in article quality (15). While providing added competition, these online journals raise concerns about the ethics of academic publication behind “pay walls,” particularly publication of academic articles based on studies funded by federal monies. In 2009, the National Institutes of Health enacted the NIH Public Access Policy, which requires that all investigators who are funded by the National Institutes of Health submit manuscripts to a repository in which they are made publicly available within 12 months of their publication. Some universities are also promoting open access by creating a repository of freely available manuscripts published by faculty (16).

LOOKING FORWARD: CHALLENGES AND OPPORTUNITIES

Do the threats posed by digitalization portend the end of journals and professional societies as we know them? Can the relationship between the SER and *AJE* survive these changes? We would suggest that although these changes indeed pose a challenge, they also present an opportunity for the *Journal* and Society to reinvent themselves in an era of multimedia-based content delivery, allowing us to create a new venue for debate, interaction, and translation of results. As a leading publication and group of scholars in epidemiology, the *AJE* and SER can continue to offer fora, both in print and as associational networks, for the sharing and discussion of results and ideas that appeal to a broader audience. By elevating ideas of merit, the *AJE* and SER can cut through the confusion and misinterpretation of epidemiologic results and clarify for professionals and the general public why we exist as a discipline.

We suggest that looking forward, the *AJE*, in partnership with SER, stands to continue playing a 3-part role: to curate, catalyze, and clarify a body of high-quality epidemiologic research. To do so, the *Journal* and the Society will act in concert, each reflecting the strengths of the other.

In its role as a catalyst to advance knowledge, the *AJE* propels us forward by offering both a space for new advances in the field and also an environment in which to question our current practices. The *Journal* offers a space for commentaries and rebuttals and encourages authors to be critical of existing methods. For example, in their 2008 paper “Constructing inverse probability weights for marginal structural models” (17) (cited 424 times), Cole and Hernán made recommendations on how to adjust for confounding and selection bias by time-varying covariates that are affected by prior exposure.

Although these methods were discussed in the *Journal* before the publication of that article (18–23), Cole and Hernán described the best practices for using this approach to data analysis. In the following years, the Society hosted several symposia and included an introduction to marginal structural models on SERPlaylists. The *Journal* therefore presents a forum in which new ideas can be introduced, vetted through rigorous peer review, and presented to a broad audience by capitalizing on digital technologies, thereby setting the stage for ideas to clash and debate to be encouraged in the public fora organized and curated by SER. Opportunities afforded by digital communication can extend the reach of both the *Journal* and the Society to engage a global community of investigators far more efficiently than was ever previously possible. This therefore preserves the role of the *AJE* as a core arbiter of quality of ideas and couples it with the Society’s reach and capacity to subsequently engage a broad constituency of epidemiologists in debating and adopting these ideas through epidemiologic research and practice.

The relationship between the *Journal* and Society can be reciprocal, as new ideas in the field start in the Society and are subsequently expanded upon in the *Journal*’s pages. As the curators of the premier inventory of epidemiologic manuscripts, *AJE* is responsible for selecting and presenting manuscripts that represent emerging ideas in the field. Throughout its history, the *AJE* has been the host to papers that advance epidemiologic methods and our understanding of the causes of the health of populations. Many of these ideas emerge first in the Society’s discussions, which afford less formal opportunities to introduce new ideas that can be debated and discussed before submission to the *Journal*. The *AJE*’s sister journal, *Epidemiologic Reviews*, is published yearly and contains review articles on a preselected, current topic in public health. The *Journal* therefore puts their stamp of approval on ideas that often originate and are presented and debated at meetings. For example, some of the core concepts in social epidemiology emerged in Society discussions and were eventually included in the field’s canon through publication in the *Journal* (24–27). An issue of *Epidemiologic Reviews* in 2004 then provided a compendium of articles in the field, serving to look back on the body of knowledge until that point and to urge the field forward. Therefore, after presentation and discussion, concepts are refined and become part of the body of knowledge that represents the field once published in the *Journal*. In some respects, the digital age further elevates the importance of this role for the *Journal*. The democratization of ideas inevitably introduces more ideas, with much less opportunity for rigorous scrutiny before the ideas reach wide audiences. It then falls to the *Journal* in the digital age to curate these ideas through selection of which concepts merit publication.

As ideas emerge, are discussed, and are adopted (or not), the Society presents opportunities for these new ideas to be tested against a broader audience. Through repeated exposure to comment and discussion, new ideas can be elaborated and discussed, with nuance emerging through repeated exposure and the engagement of peers, as a form of robustness testing of novel, as yet untested concepts in quantitative public health science. It falls then to publication in the *Journal* to clarify these methods through the discipline imposed by the rigors of formal presentation and publication. For example, over the past decade, there has been considerable discussion

in the field around the adoption of complex systems dynamic models in epidemiology. This has involved symposia on the topic at Society meetings in 2009, 2012, 2013, and 2015. Subsequent issues of the *Journal* have included papers that have brought clarity to the field by introducing the methods themselves (28), situating the methods within the broader rubric of causal thinking (29), and detailing how to make use of these methods both as proof of concept and to advance the field's core mission to understand the determinants of population health (30). By synthesizing information that has already been discussed and debated, the *Journal* then serves to bring consistency and rigor to our adoption of particular approaches and provides us with a shared formal vocabulary that can advance thought in a particular area. Therefore, the Society and the *Journal* both meet their educational responsibility to distill topics to their essential elements and present them to a diverse audience that includes both novices and established experts. Digital opportunities further extend this function. The Society has created a digital resource library that compiles talks and advice from senior epidemiologists and is available to all members on the website, further extending the feedback among the two.

CONCLUSIONS

The *Journal* and the Society have jointly grown and flourished as the field of epidemiology has extended its scope and reach. They both have successfully shifted focus from infectious to chronic diseases in the 1960s, adapted to view health through a global lens, and moved to embrace newer perspectives in epidemiology in the past few of decades. The digital revolution, which is transforming print and communication of ideas, stands to test the relevance of both. We suggest that through capitalizing on opportunities afforded by new digital technologies and the unique advantages afforded by rigorous peer review and face-to-face discussion and debate, the *Journal* and Society will continue to have a role in curating, catalyzing, and clarifying the contributions of the field.

ACKNOWLEDGMENTS

Author affiliations: Department of Epidemiology, Boston University School of Public Health, Boston, Massachusetts (Kristen A. Hahn, Sandro Galea).

Both authors contributed equally to this work.

We would like to acknowledge Suzanne Bevan of the Society for Epidemiologic Research and Harriett Telljohann of the *American Journal of Epidemiology* for helping to provide membership and subscribership numbers, as well as for their assistance in locating archived materials.

Conflict of interest: none declared.

REFERENCES

1. Fee E. Adapting to specialization: the founding, growth, and transformation of the American Journal of Hygiene. *Am J Epidemiol.* 1991;134(10):1030–1040.
2. Change in name [editorial]. *Am J Epidemiol.* 1965;81(1):1.
3. American Journal of Epidemiology. About the Journal. www.oxfordjournals.org/our_journals/aje/about.html. Updated 2015. Accessed May 13, 2015.
4. Terris M. The Society for Epidemiologic Research (SER) and the future of epidemiology. *Am J Epidemiol.* 1992;136(8):909–915.
5. Terris M. Society for Epidemiologic Research [commentary]. *Am J Epidemiol.* 1968;87(2):266.
6. Sartwell PE, Stark F. *American Journal of Epidemiology*: its evolution since 1965. *Am J Epidemiol.* 1991;134(10):1041–1046.
7. Bickel J. The role of professional societies in career development in academic medicine. *Acad Psychiatry.* 2007;31(2):91–94.
8. Hitchcock MA, Bland CJ, Hekelman FP, et al. Professional networks: the influence of colleagues on the academic success of faculty. *Acad Med.* 1995;70(12):1108–1116.
9. Hromas R, Abkowitz JL, Keating A. Facing the NIH funding crisis: how professional societies can help. *JAMA.* 2012;308(22):2343–2344.
10. Chan L, Kirsop B, Arunachalam S. Towards open and equitable access to research and knowledge for development. *PLoS Med.* 2011;8(3):e1001016.
11. Wagner CS. *The New Invisible College: Science for Development.* Washington, DC: Brookings Institution Press; 2008.
12. Lozano GA, Lariviere V, Gingras Y. The weakening relationship between the impact factor and papers' citations in the digital age. *J Am Soc Inf Sci.* 2012;63(11):2140–2145.
13. Laakso M, Welling P, Bukvova H, et al. The development of open access journal publishing from 1993 to 2009. *PLoS One.* 2011;6(6):e20961.
14. Evans JA, Reimer J. Open access and global participation in science [Brevia]. *Science.* 2009;323(5917):1025.
15. Björk BC, Solomon D. Open access versus subscription journals: a comparison of scientific impact. *BMC Med.* 2012;10:73.
16. National Research Council, NAS Forum. *Statement on Expanded Public Access to Publications.* Washington, DC: National Research Council; 2013.
17. Cole SR, Hernán MA. Constructing inverse probability weights for marginal structural models. *Am J Epidemiol.* 2008;168(6):656–664.
18. Cole SR, Hernán MA, Anastos K, et al. Determining the effect of highly active antiretroviral therapy on changes in human immunodeficiency virus type 1 RNA viral load using a marginal structural left-censored mean model. *Am J Epidemiol.* 2007;166(2):219–227.
19. Cole SR, Hernán MA, Margolick JB, et al. Marginal structural models for estimating the effect of highly active antiretroviral therapy initiation on CD4 cell count. *Am J Epidemiol.* 2005;162(5):471–478.
20. Cole SR, Hernán MA, Robins JM, et al. Effect of highly active antiretroviral therapy on time to acquired immunodeficiency syndrome or death using marginal structural models. *Am J Epidemiol.* 2003;158(7):687–694.
21. Cook NR, Cole SR, Hennekens CH. Use of a marginal structural model to determine the effect of aspirin on cardiovascular mortality in the Physicians' Health Study. *Am J Epidemiol.* 2002;155(11):1045–1053.
22. López-Gatell H, Cole SR, Hessol NA, et al. Effect of tuberculosis on the survival of women infected with human immunodeficiency virus. *Am J Epidemiol.* 2007;165(10):1134–1142.

23. Bodnar LM, Davidian M, Siega-Riz AM, et al. Marginal structural models for analyzing causal effects of time-dependent treatments: an application in perinatal epidemiology. *Am J Epidemiol.* 2004;159(10):926–934.
24. Kaufman JS, Cooper RS. Seeking causal explanations in social epidemiology. *Am J Epidemiol.* 1999;150(2):113–120.
25. Shy CM. The failure of academic epidemiology: witness for the prosecution. *Am J Epidemiol.* 1997;145(6):479–484.
26. Seeman TE, Kaplan GA, Knudsen L, et al. Social network ties and mortality among the elderly in the Alameda County Study. *Am J Epidemiol.* 1987;126(4):714–723.
27. Syme SL, Berkman LF. Social class, susceptibility and sickness. *Am J Epidemiol.* 1976;104(1):1–8.
28. Auchincloss AH, Diez Roux AV. A new tool for epidemiology: the usefulness of dynamic-agent models in understanding place effects on health. *Am J Epidemiol.* 2008;168(1):1–8.
29. Marshall BD, Galea S. Formalizing the role of agent-based modeling in causal inference and epidemiology. *Am J Epidemiol.* 2015;181(2):92–99.
30. El-Sayed AM, Seemann L, Scarborough P, et al. Are network-based interventions a useful antiobesity strategy? An application of simulation models for causal inference in epidemiology. *Am J Epidemiol.* 2013;178(2):287–295.