Founding Concepts and Foundational Work: Establishing the Framework for the Use of Acknowledgments as Indicators

Nadine Desrochers[1], Adèle Paul-Hus[1] and Jen Pecoskie [2]

[1] *nadine.desrochers@umontreal.ca, adele.paul-hus@umontreal.ca*
Université de Montréal, École de bibliothéconomie et des sciences de l'information, C.P. 6128, Succ. Centre-Ville, H3C 3J7 Montreal, QC (Canada)

[2] *jpecoskie@wayne.edu*
School of Library and Information Science, Wayne State University, Detroit, MI, 48202 (USA)

Abstract
Building on the concepts of the reward system of science and social capital, Blaise Cronin brought forth the idea that rewards in science are threefold, forming a triangle built from authorship, citations, and acknowledgements. Of these, acknowledgments are the hardest to grasp and evaluate. After nearly 45 years of multidisciplinary research on acknowledgments and a corpus of over 80 scientific contributions, there is still no consensus on the value of acknowledgments in scholarly communication. This study aims to further acknowledgments research with a meta-synthesis of the literature, establishing the theoretical framework for the use of acknowledgments as bibliometric indicators. Based on in-progress content analyses, broad categories emerge revealing contextual information crucial to the understanding of acknowledgments. Applying our framework on data from the Web of Science, further phases of this study will provide large-scale findings based on a multidisciplinary sample. From there, it will be possible to envision recommendations for the standardization and use of acknowledgments as indicators. However, grounding the study of acknowledgments in their underlying theoretical considerations and conceptual foundations will ensure these recommendations respect the diverse traditions of the scientific field.

Conference Topic
Theory

Introduction and background
It is a broadly recognized fact that the scientific field has a very "high degree of codification", to borrow the Bourdieusian phrase (Bourdieu, 1996, p. 226). How and when one is admitted into the academic community, how a researcher acquires credibility within the scientific realm, and what contributions turn a researcher into a renowned scholar are endlessly evaluated, measured, and scrutinized. This high degree of codification helps to both foster and assuage the paradox that underlies the use of empirical measures to define what remains an intrinsically nuanced and contextualized concept: scientific "success".

Merton (1973) presented the sociology of science with the reward system of science, its recognition paradigm, and the nepotistic undertones of the Matthew effect; Bourdieu reframed the concept of recognition to befit the concept of symbolic capital. Blaise Cronin brought forth the idea that these rewards are threefold, forming a triangle built from authorship, citations, and acknowledgements (Cronin, 1995; Cronin, 2005; Cronin & Weaver-Wozniak, 1993). These are all part of the *illusio*, which encompasses the stakes of the academic "game", its rules, and the very fact that its rewards are worth pursuing (Bourdieu, 1988, p. 56).

Of these rewards, acknowledgments are the hardest to grasp and evaluate; reasons range from lack of standardization to name-dropping and ambiguous wording (Cronin, 1995; Cronin, 2014), as well as the placement of acknowledgments, which can vary from in-text mentions to paratextual elements situated outside the body of the text (Genette, 1997). Researchers have also called for stricter policies to inform the use of acknowledgments, prescribe their form, offer conditions for inclusion, or establish their ethical ramifications (Brown, 2009; Chubin, 1975; Pontille, 2001). For example, while Cronin's research (Cronin, 1995) showed that in

most researchers' view, obtaining permission to thank is unnecessary, certain current editorial policies (e.g., PLOS ONE, 2015) require any acknowledging party to obtain the acknowledged party's permission. Extricating one aspect of acknowledgments is also not always straightforward. The "Funding Text" (FT) field of the Web of Science (WoS) database, indexed since 2008, is a telling example, since it often contains all things and people acknowledged, not just the agencies or institutions that provided funds to the project. That being said, the FT field of the WoS has opened new avenues for this research by making massive datasets available.

However, the literature heeds one important and overarching warning: after nearly 45 years of multidisciplinary study and a corpus of over 80 scientific contributions, there is still no consensus on the value of acknowledgments, no potential for meta-analysis within this corpus, and, despite common questions, no shared framework for further analysis, nor any clear recommendations for standardization. Given this situation, this study aims to further acknowledgments research with potential contributions to scientific policy guidelines (editorial and institutional) and research assessment (individual and disciplinary) in the scientometrics field, which has shown ongoing interest for acknowledgments as a potential indicator (Cronin & Weaver-Wozniak, 1992; Cronin, 2005; Díaz-Faes & Bordons, 2014).

In order to gain an understanding of where acknowledgments research had emanated from and where it is currently situated in the scientific ecology, an initial overview of the literature on acknowledgments was conducted, leading to the retrieval and document-level analysis of 115 scientific publications, which became the subject of a chapter submitted for inclusion in a book on theories in informetrics (Desrochers, Paul-Hus, & Larivière, in press).

This phase of the research established that the reward triangle can and should be studied, not only for its three constituting factors, but also for the relationships between them. It showed that the meeting point of citation and authorship is the apex of the reward triangle. Acknowledgements, however, are foundational in that they reveal the inner workings of the scientific *illusio* (Bourdieu, 1988) that support this apex and that have, historically, supported key conceptual frameworks: the "invisible college" (Crane, 1972), "trusted assessors," encountered before and during the peer review process (Mullins & Mullins, 1973), and the categorization of authors vs. acknowledged contributors (Patel, 1973).

Methodology

Following this initial review, it became clear that a meta-analysis of acknowledgments research would not be possible; however, the range of complex and varied approaches could form the basis for a meta-synthesis (Rousseau, Manning & Denyer, 2008) of the literature. This will: extract knowledge on the perceptions of acknowledgements across a variety of disciplines (e.g., Information Science, History, Astronomy, Literature, and Psychology); provide scientometricians with information pertaining to the nuances and contexts of research creation in various disciplines; and yield the conceptual framework necessary to undertake acknowledgements research on a larger scale using multidisciplinary datasets. The following research questions were thus devised:

1. What does "acknowledgment research" look like?
    a. Throughout history? (1970-present)
    b. What were its founding concepts and considerations?
    c. How are acknowledgments perceived and positioned in the acknowledgments literature itself?
2. Who is concerned with acknowledgment research?
    a. Scientists from what fields conduct acknowledgment research?
3. What aspects of acknowledgments are studied in acknowledgment research?

Using approaches based in the Social and Health Sciences (Rousseau et al., 2008; Dixon-Woods et al., 2005; Mays, Pope & Popay, 2005) and recommendations specific to the use of evidence-based literature in Information Science (Urquhart, 2010), a protocol for meta-synthesis was established using the PRISMA model for systematic literature reviews (Moher et al., 2009). The most recent searches place the corpus at 80 relevant documents. This paper presents preliminary findings and initial theoretical considerations.

Preliminary Findings and Discussion - Foundations for a theoretical framework

Based on in-progress content analyses, broad categories are emerging; they reveal contextual information crucial to the understanding of acknowledgments as potential bibliometric indicators.

Paratextual Status: Acknowledgements can be elusive, especially in structure-driven datasets. Standardized locations, conventions, separate paragraphs, in-text allusions, database fields defined as pertaining to one aspect but including others are all intrinsic to understanding their value.

Disciplinary Contexts: The literature stems from various disciplines, yielding a broad range of methods and reporting styles. It also approaches the topic from various angles: a discipline (e.g., Cronin, 2001), a culture or a group (e.g., Woolf, 1975), a linguistic community (e.g., Al-Ali, 2010), a specific journal or set of journals (e.g., Rattan, 2013), dissertations (e.g., Gesuato, 2004), or direct enquiry (e.g., Heffner, 1979), quantitative (e.g., Costas & van Leeuwen, 2012) or qualitative (e.g., Bashtomi, 2008). These differences do provide a spectrum of perspectives that need to be part of any standardization process of these scholarly rewards into contextualized indicators.

The Thankers and the Thanked: At its core, acknowledgments research is based on the basic questions of who or what gets thanked by whom and for what. From the expression of gratitude towards spouses to the mention of support from grant agencies, scientific acknowledgments reflect the same diversity as acknowledgments from other types of writers, such as literary writers (Desrochers & Pecoskie, 2014) and can be seen as a "'ledger' where debts are acknowledged" (Weber & Thomer, 2014, p. 84). Inconsistencies abound: people are thanked without specification of tasks, tasks are listed without names; financial capital is embedded with social capital and with messages of a highly personal nature (Coates, 1999).

Cloak and Dagger Reveals: The previous two categories show that scientific acknowledgments are sometimes as much a puzzle as they are clear; this in itself is information. Indeed, the last decades have shown interest in the fact that acknowledgments can expose the invisible college and pre-publication readers, including unknown reviewers, thereby setting boundaries between groups who know their identities and those who do not. This is obviously problematic in terms of using acknowledgments as indicators; yet abolishing this practice would mean revoking a practice that pays homage to the peer review process as it currently exists.

Language and Ethics: The acknowledgments genre has been studied in Linguistics and alluded to in other disciplines, including Information Science (Cronin, McKenzie & Stiffler, 1992). "How" entities are thanked is closely linked to prescribed funding-based requirements, cultural and disciplinary practices, and editorial guidelines, the latter being related to the ethics of thanks: securing permission to thank someone, paying 'lip service' to key players, and name-dropping (Cronin, 1995; Hollander, 2002)—angles reminiscent of the Matthew effect.

Value and Perception: Finally, acknowledgments research has the ingrained quality, seen elsewhere in science but perhaps rarely to this extent, to turn on itself. Numerous papers oscillate between two positions: perceiving acknowledgments as suitable for study and as potential indicators, true to the Merton-Bourdieu-Cronin theoretical continuum; and

criticizing them as problem-laden, lacking standardization, and fickle. Context and processes have come under scrutiny in the use of other indicators in research assessment; yet acknowledgment studies have a particular penchant for self-deprecation while relying on what is now four decades of research to insist upon the fact that there is something to this paratext.

Conclusion and Upcoming Phases

Quantitative content analysis will help weigh these concerns throughout the history of acknowledgments research. Qualitative analysis will help nuance these findings through context, history, and disciplinary boundaries. Together, these analyses will provide a meta-synthesis of the existing literature, from which the conceptual framework outlined here will be refined for use in further studies. The goal is to use this framework on data from the WoS and to provide large-scale findings based on a multidisciplinary sample. From there, it will be possible to envision recommendations for the standardization and use of acknowledgments as indicators.

However, since the literature provides many important warning signs, heeding them and grounding the study of acknowledgments in their underlying conceptual foundations will ensure these guidelines respect the multiple traditions of the scientific field and work within the boundaries of the evolving high stakes of codification. Furthermore, they will help take into account the fact that acknowledgments have long had a special standing in academia as the place where the *homo academicus* (Bourdieu, 1988) can make the invisible visible, but also vice-versa. This, in itself, is a stake of the *illusio* that deserves to be better understood.

Acknowledgements

This research was supported by the Social Sciences and Humanities Research Council of Canada. The researchers further thank Vincent Larivière for his support and insight.

References

Al-Ali, M. N. (2010). Generic patterns and socio-cultural resources in acknowledgements accompanying Arabic Ph.D. dissertations. *Pragmatics*, *20*(1), 1–26.

Basthomi, Y. (2008). Interlanguage discourse of thesis acknowledgements section: Examining the terms of address. *Philippine Journal of Linguistics*, *39*(1), 55–66.

Bourdieu, P. (1975). The specificity of the scientific field and the social conditions of the progress of reason. *Social Science Information*, 14(6), 19–47.

Bourdieu, P. (1988). *Homo academicus*. Stanford, Calif.: Stanford University Press.

Bourdieu, P. (1996). *The Rules of Art: Genesis and Structure of the Literary Field*. Stanford, Calif.: Stanford University Press.

Brown, R. (2009). How scholars credit editors in their acknowledgements. *Journal of Scholarly Publishing*, *40*(4), 384–398.

Chubin, D. E. (1975). Trusted assessorship in science: A relation in need of data. *Social Studies of Science*, *5*(3), 362–367.

Coates, C. (1999). Interpreting academic acknowledgements in English studies: Professors, their partners, and peers. *English Studies in Canada*, *25*(3-4), 253–276.

Costas, R., & van Leeuwen, T. (2012). Approaching the "reward triangle": General analysis of the presence of funding acknowledgments and "peer interactive communication" in scientific publications. *Journal of the American Society for Information Science and Technology*, *63*(8), 1647–1661.

Crane, D. (1972). *Invisible Colleges: Diffusion of Knowledge in Scientific Communities*. Chicago, IL: University of Chicago Press.

Cronin, B. (2014). Foreword: The penumbral world of the paratext. In N. Desrochers & D. Apollon (Eds.), *Examining Paratextual Theory and its Applications in Digital Culture* (pp. xv-xix). Hershey, PA: IGI Global.

Cronin, B. (1995). *The Scholar's Courtesy: The Role of Acknowledgement in the Primary Communication Process*. London: Taylor Graham.

Cronin, B. (2001). Acknowledgement trends in the research literature of information science. *Journal of Documentation*, *57*(3), 427–433.

Cronin, B. (2005). *The Hand of Science: Academic Writing and its Rewards*. Lanham, Maryland: Scarecrow Press.

Cronin, B., McKenzie, G., & Stiffler, M. (1992). Patterns of acknowledgement. *Journal of Documentation*, *48*(2), 107–122.

Cronin, B., & Weaver-Wozniak, S. (1992). An online acknowledgment index: Rationale and feasibility. In D. Raitt (Ed.), *Online Information 92: Proceedings of the 16th International Online Information Meeting, London, 5-10 December 1992* (pp. 281–290). Oxford: Learned Information.

Cronin, B., & Weaver-Wozniak, S. (1993). Online access to acknowledgements. *Proceedings of the 14th National Online Meeting 1993* (pp. 93–98). New York: M.E. Williams.

Desrochers, N., Paul-Hus, A., & Larivière, V. (in press.) The angle sum theory: Exploring the literature on acknowledgments in scholarly communication. In C. R. Sugimoto (Ed.), *Theories of Informetrics and Scholarly Communication.* Boston, MA: De Gruyter.

Desrochers, N., & Pecoskie, J. (2014). Inner circles and outer reaches: Local and global information-seeking habits of authors in acknowledgment paratext. *Information Research, 19*(1), paper 608. Retrieved from http://InformationR.net/ir/19-1/paper608.html

Díaz-Faes, A. A., & Bordons, M. (2014). Acknowledgments in scientific publications: Presence in Spanish science and text patterns across disciplines. *Journal of the Association for Information Science and Technology*, 65(9): 1834-1849.

Dixon-Woods, M., Agarwal, S., Jones, D., Young, B., & Sutton, A. (2005). Synthesising qualitative and quantitative evidence: A review of possible methods. *Journal of Health Services Research & Policy*, *10*(1), 45–53B.

Gesuato, S. (2004). Acknowledgments in PhD dissertations: The complexity of thanking. In C. Taylor Torsello, M. Grazia Bùsa, & S. Gesuato (Eds.), *Lingua inglese e mediazione linguistica. Ricerca e didattica con supporto telematico* (pp. 273–318). Padova: Unipress.

Heffner, A. G. (1979). Authorship recognition of subordinates in collaborative research. *Social Studies of Science*, *9*(3), 377–384.

Hollander, P. (2001). Acknowledgments: An academic ritual. *Academic Questions*, *15*(1), 63–76.

Mays, N., Pope, C., & Popay, J. (2005). Systematically reviewing qualitative and quantitative evidence to inform management and policy-making in the health field. *Journal of Health Services Research & Policy*, *10*(suppl 1), 6–20.

Merton, R. K. (1973). *The sociology of science: Theoretical and empirical investigations*. Chicago: University of Chicago Press.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med*, *6*(7), e1000097.

Mullins, N. C., & Mullins, C. J. (1973). *Theories and Theory Groups in Contemporary American Sociology*. New York, NY: Harper and Row.

Patel, N. (1973). Collaboration in the professional growth of American sociology. *Social Science Information*, *12*(6), 77–92.

PLOS ONE. (2015). PLOS ONE manuscript guidelines: Acknowledgments. Retrieved from http://www.plosone.org/static/guidelines#acks

Pontille, D. (2001). L'auteur scientifique en question: Pratiques en psychologie et en sciences biomédicales. *Social Science Information*, *40*(3), 433–453.

Rattan, G. K. M. (2013). Acknowledgement patterns in annals of library and information studies 1999-2012. *Library Philosophy and Practice*, *e-journal* (paper 989). Retrieved from http://digitalcommons.unl.edu/libphilprac/989/

Rousseau, D. M., Manning, J., & Denyer, D. (2008). *Evidence in management and organizational science: Assembling the field's full weight of scientific knowledge through syntheses* (SSRN scholarly paper 1309606). Rochester, NY: Social Science Research Network. Retrieved from http://papers.ssrn.com/abstract=1309606

Urquhart, C. (2010). Systematic reviewing, meta-analysis and meta-synthesis for evidence-based library and information science. *Information Research, 15*(3), paper 708. Retrieved from http://www.informationr.net/ir/15-3/colis7/colis708.html

Weber, N. M. & Thomer, A. K. (2014). Paratexts and documentary practices: Text mining authorship and acknowledgment from a bioinformatics corpus. In N. Desrochers & D. Apollon (Eds.), *Examining Paratextual Theory and its Applications in Digital Culture* (pp. 84-109). Hershey, PA: IGI Global.

Woolf, P. (1975). The second messenger: Informal communication in cyclic AMP research. *Minerva*, *13*(3), 349–373.