Academe’s unspoken ethical dilemma: author inflation in higher education

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Abstract

Tenure, promotion, significant salary increases, let alone stature and recognition in one’s field, are often dependent on the quantity and quality of research articles faculty members produce. In addition, research grants, text and professional publications may be dependent upon intellectual contributions and often equated with research published in professional journals. These pressures, along with accreditation requirements, often force faculty members to place greater emphasis on research rather than teaching or service responsibilities. Administrators sometimes also coerce senior faculty members to “help out” junior faculty members achieve tenure by including them in their research endeavors. In response to such pressures more and more research articles have an increasing number of authors on the publication byline. This poses ethical concerns regarding author validity and legitimate individual contribution to research that helps to advance the profession.
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Introduction

An academic commonly moves up the faculty hierarchy by being favorably evaluated by colleagues and administrators for their triadic responsibilities of teaching, service, and scholarly/creative activity. The ways in which faculty members meet these three accountabilities vary from department to department, school to school, and may differ throughout a faculty member’s career. Faculty members are often evaluated on each of these three work roles annually and commonly before being considered for tenure and/or promotion in rank.

The soaring importance of scholarship

Although there is no general specific weight assigned to each of the these three key areas of responsibility, results from a number of national studies over several decades show the increasing influence of scholarship—which has become synonymous with research and publication (Boyer, 1990; Fairweather, 1993, 1996)—in determining faculty rewards (Blackburn & Bentley, 1990; Fairweather, 1996). More recently, Green (2008) noted in his survey of 130 deans and directors that the scholarly activity role has become more salient than ever in tenure and promotion decisions and that teaching and service roles have become less influential. He found that the hierarchical weighting in which scholarship is more important than teaching and teaching is more valuable than service was the most frequent pattern of weighting in tenure and promotion decisions for all graduate faculties for all ranks: assistant professor, associate professor, and full professor.

Similarly, Scarlett (2004) noted that institutional reward systems—tenure, promotion, significant salary increases—in a great many institutions are based on scholarship and creative activity rather than teaching and service. Miller and Sedlin (2014) likewise found in their survey responses regarding promotion and tenure criteria from deans at 410 four-year liberal arts colleges that value increasingly is being placed on scholarship—even for professors at teaching-oriented liberal arts institutions. Specifically, the number of deans citing research as a major factor in overall faculty evaluation rose between 2000 and 2010 from 40.5 to 51.8 percent with an emphasis on publication increasing from 30.6 percent in 2000 to 39.6 percent in 2010.

Authoring publications is significant because the “publish or perish” culture of science today places enormous value on how many papers academics have authored and in which journals those reports appear. It has become a form of “scientific currency” (Louis, Holdsworth, Anderson, & Campbell, 2008) which may lead researchers to maximize authorship credit (Bennett & Taylor, 2003). Research and publications have become critical in defining success in academic careers holding the key to the three P’s of prestige, promotion and pay (Mitcheson, Collings, & Siebers, 2011) as well as recognition for creativity, peer recognition, superior evaluations, and better positions elsewhere. Likewise, Borry, Schotsmans, and Dierickx (2006) wrote that “Publications in peer reviewed journals

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are proof of academic competence, are used as evaluation criteria for academic promotion and fundraising and increase the prestige of research universities” (p. 213). These observations are consistent with the oft-heard observation that faculty members are paid to teach but are rewarded for their research and publications. Consistent with such a reward structure many tenure-track faculty members spend as much as 80% of their time on research work, with very little time committed to teaching or service work (Kezer & Maxey, 2015).

Not only do many higher education institutions emphasize research and publication but so do outside accreditation agencies. In the business disciplines, for example, the Association to Advance Collegiate Schools of Business (AACSB; n.d.)—is the premier organization responsible for the accreditation of college and university programs in business administration and accounting. Historically, those institutions aspiring to AACSB accreditation hired graduates from doctoral research schools to produce quality research. Publication of basic or theoretical research in high quality refereed journal articles was the standard by which schools were commonly measured for accreditation purposes. Faculty scholarship appearing in less prestigious academic journals, practitioner journals, papers published in academic proceedings, non-refereed publications such as books, paper presentations and other forms of scholarly outputs were typically viewed less favorably (Spritzer & Billings, 2005). AACSB standards and their application by visit teams expected that schools achieve a faculty research profile characteristic of the established doctoral institutions, irrespective of the educational missions of individual schools. Thus, the scholarship of faculty at schools with undergraduate and master’s degree programs only was often expected to emulate the doctoral schools. In a number of cases, this was achieved, though typically the quality and quantity of research were at lower levels (Spritzer & Billings, 2005). This research emphasis continues today although research relevance is being stressed.

Research and publications in much of higher education, then, seem to trump classroom and service obligations from a number of perspectives. Because the criteria for institutional rewards increasingly focus on research, the pressure in academia to rapidly and continually publish academic work has become a reality at many 4-year colleges and universities—not just elite research institutions (Fotion & Conrad, 1984). While teaching and service are encouraged, they are often not rewarded and new faculty members who show a serious concern about their teaching and/or service commitments are often warned about their “misplaced priorities” and reminded of the significance of publishing (Sharpe & Bolton, 2016).

Faculty members have responded and there has been a significant increase in publications. One way they have done this is through “salami-style” publication behavior which involves the “slicing” of research or breaking up or segmenting data that would normally form one meaningful paper and creating several different manuscripts for publication (Abraham, 2000; Angell & Relman, 1989). Salami slicing can lead to a distortion of the literature by leading unsuspecting readers to believe that data presented in each salami slice (i.e., journal article) is derived from a different subject sample (U. S. Department of Health & Human Services, n. d.). Another approach, and the topic of this paper, involves attaching numerous authors to a single paper, some of whom have done little to no work on the paper itself. In some cases, faculty themselves offer their low producing publication colleagues an opportunity to join them on articles in hopes that they will learn the research and publication process or to help these faculty retain their positions. Frequently, however, these low producers are given a paper and return it to their publishing colleagues and offer, “It looks good to me.” After such a questionable contribution, the low producer’s name is still added to the article and he or she is given the same credit for scholarship as the other researcher/s who contributed significantly to the paper; that is, they reap the benefits of the publication without contributing a fair share of the costs (Arneson, 1982).

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Who is an author?

With the rise in the number of authors per paper, authorship in itself has become a highly debated field of study (Cronin, 2001; Rahman & Muirhead-Allwood, 2010; Regalado, 1995). In theory, authorship seems simple enough—list major contributors only and list them in descending order of involvement in the project, right? The problem is that there are almost as many views on how to assign authorship as there are scientists! But in practice, questions of authorship often create difficulties. Indeed, evidence indicates that there are low levels of understanding as to what constitutes a legitimate claim to authorship where more than one author is credited (Erlen, Siminoff, Sereika, & Sutton, 1997; Mithcheson et al., 2011; Pignatelli, Maisonneuve, & Chapuis, 2005).

Throughout all authorship guidelines, there is always the caveat that conditions for authorship vary among disciplines and that there is no universally agreed upon “law of the land.” Nevertheless, the international standard for authorship seems to be coalescing around the protocol offered by the International Council of Medical Journal Editors (ICMJE). While the code originated in the biomedical sciences in 1978, it is now being applied across many academic disciplines by a large number of research-intensive universities (e.g., Washington University in St Louis, 2009) and in higher education systems, such as Australia (e.g. Universities Australia, 2007). The ICMJE recommends that authorship be based on the following four criteria that have been acknowledged by numerous journals:

1) Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2) Drafting the work or revising it critically for important intellectual content; AND
3) Final approval of the version to be published; AND
4) Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved (ICMJE, 2016).

The ICMJE also notes that an author must have made “substantive intellectual contributions” to the manuscript. Creative input is thus more valued for authorship than purely mechanical work. In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work.

The National Institutes of Health (NIH) defines authorship a bit more flexibly than the ICMJE. According to the NIH (2016), “For each individual the privilege of authorship should be based on a significant contribution to the conceptualization, design, execution, or interpretation of the research, as well as to the drafting or substantively reviewing or revising the research article. Authorship also conveys responsibility for the study” (p. 9).

The Council of Science Editors (CSE) offers similar guidelines and indicates that all individuals who have “contributed sufficiently” should be listed as authors, and that authors should approve the paper before publication. More specifically CSE (2016) indicates that “Authors are individuals identified by the research group to have made substantial contributions to the reported work and agree to be accountable for these contributions. In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which of their co-authors are responsible for specific other parts of the work. In addition, an author should have confidence in the integrity of the contributions of their co-authors. All authors should review and approve the final manuscript.”

It is noteworthy that some research institutions, national academies, professional societies and journals also have their own authorship guidelines. Sixty percent of biomedical journals (Wager 2007), 53% of science journals, 32% of social sciences journals and 6% of arts and humanities journals have

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authorship guidelines while 11% of professional societies have authorship guidelines in their professional ethics codes (Bošnjak & Marušić, 2012).

In summary, the main requirements for authorship seem to be the three S’s of significant, sufficient, and substantial. These factors should characterize authors’ contributions to the concept, design, execution, or interpretation of the research investigation. Questions of authorship arise mainly as a result of different interpretations of what qualifies as a significant, sufficient, or substantial contribution. A classic example is the case in which an experimental facility has been used to obtain some of the data. Without the work of scientists employed to run that facility those results could not be obtained. But is their contribution to the specific work enough to warrant authorship, or would acknowledgements be more appropriate? What about the director of the facility? Should the contribution of technicians warrant authorship in general? What about collaborators that helped obtain funding that was used for the work? And what about reviewers, who in some cases substantially helped improve a paper, but whose involvement is mainly editorial?

While such terminology remains open to interpretation, it seems that most often conceiving the research and/or research design and writing of the manuscript are the most important criteria merit ing authorship credit (Lozano, 2014; Macfarlane, 2015; Marušić, Bošnjak, & Jerončić, 2011). Additionally, there is consensus about some types of contributions that do not alone justify identification as an author. Professional writers who participated only in drafting the manuscript and did not have a role in the design or conduct of the study or the interpretation of results are not considered authors, nor are technicians, “in-house” editors and reviewers, or senior scientists who contributed laboratory space. Other contributions that alone do not justify authorship include: general supervision of a research group or general administrative support; supplying statistical or computer support; acquisition of funding; isolated analyses; providing reagents/patients/animals/ other study materials; and writing assistance, technical editing, language editing, proofreading, and giving approval for the final version of the paper to be published (ICMJE, 2016; Lozano, 2014; Macfarlane, 2015). Minor contributions to the research or to the writing for publications may be acknowledged appropriately, such as in footnotes or in an introductory statement, but not in authorship.

Hyperauthorship

While there was probably far too little recognition of colleagues’ contributions early on in science, today’s rise in number of authors per paper is probably exaggerated. From the late 17th century to until about 1955 sole authorship was the standard practice in scientific research (Green, 2008; Rennie, 1997). Since then, however, there has been a rising trend in multiple authorship (Burman, 1982; Khan, Nwosu, Khan, Dwarkanath, & Chien, 1999; Onwude, Staines, & Lilford, 1993). Aboukhalil (2014) obtained metadata for all ~24 million papers listed in Pubmed as published between 1913 and 2013 and found that the average number of authors per paper has increased more than 5-fold over the last 100 years, going from one author per paper in 1913 to approximately 5.4 authors per paper in 2013. Additional support for this trend was reported by Onwude et al. (1993) who noted that every 15 years between 1945 and 1988 that medical publications in prestigious journals such as the British Medical Journal, Lancet, Journal of the American Medical Association, and the New England Journal of Medicine gained 1.26 authors while articles from other branches of science gained 0.41 authors.

This rise of multiple authors in academic research papers has been dubbed “Hyperauthorship” (Cronin, 2001, p. 558). For instance, a physics paper by Aad et al. (2015) was authored by 5154 researchers (9 pages to describe the research and 24 pages to list all authors) while a paper on the genetic make-up of a fruit fly was credited to 1,014 authors (Leung et al., 2015). And while seemingly

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impossibly large numbers of authors on a single paper raises one set of questions, seemingly impossibly productive individuals raise other questions about the nature of authorship (Wager, Singhvi, & Kleinert, 2015). Claxton (2005), for example, reported that over the course of ten years, twenty authors in one particular field were identified as having each published an average of 32 papers or more per year (which is equivalent to publishing a paper on average every 11.3 days). These two extremes raise important questions as to what really should count as authorship, and whether authorship has been assigned where it is not due.

To show changes over time, King (2013) graphed the percentage of single-author papers in 21 disciplines from 1981 to 2012. The main field of Social Sciences had the most lone-authored articles, according to both the 1981 and 2012 measurements, with Economics, Business and Mathematics following closely. The greatest percentage drop in single authored articles occurred in Economics and Business (42 points). Overall, in 1981 more than 30% of papers in Economics and Business listed a single author. By 2012, the percentage had shrunk to 11%. Similarly, Gazni and Didegah (2011) examined 22 different fields of science and found that in all these fields, at least 60% of publications were co-authored.

Trends in business schools mirror those in other fields. In management publications the number of multi-authored papers increased from 18.3% in the 1960's to 47.7% in the 1970's to 60.1% in the 1980's (Floyd, Schroeder, & Finn, 1994). Manton and English (2007) found that all journals in the field had experienced increases in the number of authors per article, a dramatic decrease in the number of sole-authored articles, and a significant increase in multi-authored articles. Trends in academic accounting show significant increases in financial, managerial, and auditing research, somewhat less steep trends in taxation research, and significant upward trends in non-specialized articles (Englebrecht, Hanke, & Kuang, 2008). Thus, today shared authorship is common in most academic fields but there are differences across disciplines. This trend towards more authors is not slowing down (Rahman & Muirhead-Allwood 2010; Bebeau & Monson 2011) and it is not merely due to greater multi-disciplinary work and research complexity (Papatheodorou, Trikalinos, & Ioannidis, 2008).

Why author inflation?

Research today, it seems, is primarily a collaborative and often an interdisciplinary endeavor and has become the norm in every field of scientific and technical research. Bozeman and Boardman (2014) use the term "collaborative imperative," suggesting that in many cases scientific collaboration is essentially a prerequisite of contemporary research. The rise of shared authorship has been attributed to Big Science—scientific experiments that require cooperation and the specialization of many individuals (de Solla Price, 1986). Indeed, one academic noted "If you want to push the limits and answer a great question, you need to collaborate" (Youtie & Bozeman, 2016, p. 4). Many university researchers tend to think of collaboration in terms of co-authorship. For this reason, and also because co-authorship is conveniently measured, much of the published work about research collaboration focuses on co-authorship (Bozeman, Fay, & Slade, 2013). As Katz and Martin (1997) point out in one of the best known and most comprehensive reviews of research collaboration the co-author concept of collaboration has several advantages, including verifiability, stability over time, data availability, and ease of measurement.

During the past several decades researchers, especially those in the biomedical sciences (e.g., Cohen, Tarnow, & De Young, 2004; Rennie, Flanagan, & Yank, 2000), have begun to focus on ethical issues and the "dark side" of collaboration (Bozeman, Youtie, Slade, & Gaughan, 2012). Far from being restricted to biomedical fields, problems in scientific collaboration are ubiquitous in science. Some of
these problems are ethical (Shrum, Chompalov, & Genuth, 2001), others practical (Bozeman & Corley, 2004), some pertain to collaboration among individuals (Katz & Martin, 1997), and some to collaboration among institutions (Chompalov & Shrum, 1999).

Authorship is becoming an increasingly complicated issue and Lagnado (2003) argues that trust in the meaning of co-authorship has eroded. Allocation of credit and responsibility for authorship is an important issue and it must be resolved if research results are to be managed and used effectively (Devine, Beney, & Bero, 2005). The assignment of authorship for publication is multifaceted and sometimes confusing and scholars and policy-makers have expressed concerns about the crediting of coauthors in research publications. Moreover, the urgent need for publications has led to abuses in authorship (Borry et al., 2006). Most such problems fall into one of two categories, excluding deserving contributors or including undeserving ones (Albert & Wager, 2003; Committee on Public Ethics, 2015a, b; Davidoff, 2000). Because of space limitations, we focus on the later—listing names of people who took little or no part in the research and what is frequently called honorary authorship.

Honorary authorship

Honorary authorship, also known as guest authorship or gift authorship occurs when individuals who, although listed on the byline as authors of an article, have not met authorship criteria for active participation in the research, in manuscript drafting, and in manuscript approval. Honorary authors may not have seen the final version that has been submitted to a journal and are therefore incapable of defending its contents (Bennett & Taylor, 2003; Lozano, 2014; Rennie, Yank, & Emanuel, 1997). One form, gift authorship, is defined as granting authorship out of appreciation to an individual. Varying cultural norms in different parts of the globe may dictate that respect and appreciation for organizational leaders mandate a recognition of their contributions to all research work published in their departments or sections. For example, in Asian cultures, departmental heads or senior researchers may be added to a paper regardless of their involvement in the research as a courtesy out of respect for, or gratitude to the gift recipient. Gift authorship may involve reciprocating favors for previous co-authorships (quid pro quo), helping a colleague obtain tenure or promotion, for romantic favors extended, or to help a graduate student whose duties included mainly administrative or technical tasks in an attempt to further the student's academic endeavors and aid them in their job search. In some cases, a colleague's name is added on the understanding that s/he will do the same simply to swell an individual's publication list. Authorships are more often gifted to colleagues with lower academic rank or to those with fewer publications, than to the departmental heads (Eisenberg, Ngo, Boiselle, & Bankier, 2011). They are also given to those performing various non-author tasks such as reviewing or approving a manuscript before submission, recruiting study subjects, supervising or recruiting co-authors, and contributing illustrations (Eisenberg et al., 2011).

Another form, guest authorship, may be used for multiple purposes, including the belief that by adding a well-known name the guest will increase the likelihood of publication, credibility, or status of the work, or to conceal a paper's industry ties by including an academic author. Additional issues regarding honorary authorship are the inclusion of an author on a manuscript without his or her permission (which is often prevented by journal guidelines that require the consent of all authors) and senior faculty in positions of authority who become honorary authors as the result of interpersonal coercion, ranging in severity from subtle expectations to outright demands. This so-called "White Bull" effect (Kwok, 2005) where senior researchers coercively assert a first authorship credit means that junior and less experienced academics and research students can either be excluded from a list of named authors or receive an authorship credit which reflects their organizational status rather than intellectual
contribution. Interestingly, Eastwood, Derish, Leash, and Ordway (1996) found that one-third of all respondents would list an undeserving author on a publication. This is often done to increase the chances of their work being published or to benefit their research career. Paradoxically, this proportion increased to 75% among authors who had experienced being unfairly denied authorship, had co-authored a paper with an undeserving author, or who had been pressured to list an undeserving author on a paper. Although most professionals would agree that writers should not give authorship credit to individuals who have not contributed to the project, this can be difficult, as the social and political pressures to do so can be overwhelming. For ease of discussion all these forms of authorship are referred to as honorary authorship.

Several researchers have expressed dismay at the proliferation of honorary authorship (Bennett, & Taylor, 2003; Seeman & House, 2010). Surveys find, for example, that 10% of grant recipients from the National Institutes of Health admitted to inappropriately assigning authorship credit (Martinson, Anderson, & de Vries, 2005). Similarly, a survey of non-first authors in the “basic” and medical sciences revealed that 26% admitted to not contributing substantially to the paper (Shapiro, Wenger, & Shapiro, 1994), and in the business literature 35% of authors surveyed reported assigning authorship to someone who had done little very little work on a published article and 10% responded that they had a coauthor on a publication who had done no work (Manton & English, 2008). In a survey of USA chemists, about 20% reported having found they were authors of a paper only after it had been printed (Seeman & House, 2010). Al-Herz, Haider, Al-Bahhar, and Sadeq (2014) reported that 33.4% of authors admitted to adding people who did not merit authorship. O'Brien, Baerlocher, Newton, Gautam, and Noble (2009) found that 52% of authors had been listed with an honorary coauthor at some point in their career, with 18% suggesting some coercion. Eisenberg, Ngo, and Bankier (2014) reported that 27.7% of first authors perceived that at least one coauthor did not make sufficient contributions to merit authorship, while 50.3% stated that one or more coauthors had only performed “non-author” tasks. Honorary authorship has been reported to occur in 17-33% of articles (Flanagan, Carey, Fontanarosa, Phillips, Pace, Lundberg, et al., 1998; Huth, 1986).

Over the years, then, there has been significant honorary authorship. Unsurprisingly, articles with over five authors are more likely to have honorary authors than those with three or fewer number of authors (Slone, 1996). The prevalence of what Slone (1996) termed undeserved authors averaged 17%, and increased from 9% in articles with three authors to 30% in those with six or more authors. Slone (1996) also reported that manuscripts with undeserved authors were most likely to include non-tenured staff who did meet authorship criteria. He further noted that the most commonly cited reason to include undeserved authors in their manuscripts was the desire to assist others get promoted.

Being included as an author usually benefits the one being added, and the costs to the other authors of including one more person are minimal even when considering intangibles, such as the desire to be referred by name. As long as each author can claim each paper and each citation as his/her own, papers and citations are not being shared by the authors, but rather magically multiplied by the number of authors (Harzing, 2010; Lindsey, 1980; Pöder, 2010). As the number of authors swelled, the responsibility, credit, and merit of authorship have been diluted (Bennett & Taylor 2003; Cronin 2001; Engelder, 2007). Furthermore, as the relative contribution of each author decreases, increasingly smaller contributions become worthy of authorship. This process can become self-reinforcing; as more authors are added, the threshold for authorship gets even lower, and it becomes easier to justify adding just one more author (Lozano, 2014).

Authors from Asia and Europe were more likely than those from North America to perceive that one or more authors were undeserving of authorship (Eisenberg et al., 2014). Rajasekaran, Shan, and Finnoff (2014) found that living outside North America was associated with greater incidence of
honorary authorship and customary when department heads automatically accepted honorary authorship. These findings emphasize the hierarchical nature of academic institutions and the difficulty experienced by junior researchers in influencing authorship decisions (Eisenberg et al., 2014; Street, Rogers, Israel, & Braunnack-Mayer, 2010). O’Brien et al. (2009) found that there were negative effects as a result of honorary authorship for the authors and coauthors alike, including personal liability for honorary authors, and the dilution of their relative contribution.

**Ethical considerations of honorary authorship**

In the age of ever-increasing research productivity expectations for faculty members’ promotion and tenure decisions, some may view violating authorship guidelines by awarding authorship to undeserving individuals as a “victimless crime” (Osborne & Holland, 2009, p. 7). But awarding tenure or promotion based on work an individual did not do is problematic. Ethical concerns became particularly problematic in the early 1980s when John Darsee violated the trust of both readers and his co-authors when it became evident that he falsified studies at Emory and Harvard Universities, which carried the names of prominent department heads. These heads were not involved in the fabrication of data but they were guilty of allowing themselves to receive credit for work without accepting public responsibility for it (Kassirer & Angell, 1991; Smith, 1994). This scandal exposed the potential for deceptive authorship and dilution of responsibility within multi-authored papers.

Honorary authorship is seen as intellectually dishonest, deceptive, unethical, and causes dilution of credit for scientific work and the validity of a paper (Bhopal, Rankin, McColl, Thomas, Kaner, Stacy et al., 1997; Rennie, 1997). It misrepresents an individual’s productivity, it can lead to undeserved outcomes, and it could be a form of abuse of power if administrators or higher-power individuals use their authority to encourage others to name them as authors undeservedly. It has been suggested that such authors are guilty of graft—someone who acquires money or accolades in a questionable or dishonest manner, if they acquire prestige and citation without having properly earned them (Klein & Moser-Veillon, 1999).

Honorary authorship is an ethical transgression because it dilutes the credit for the authors who made legitimate and substantive scientific contributions (Bennett & Taylor, 2003). It is a misrepresentation, implying a substantial intellectual contribution that was not made. It also distorts the publication record, making it a less reliable measure of productivity. Additionally, free riding on the provision of a collective good is often characterized as morally wrong. Hart (1955) says that, “if others are cooperating for mutual benefit and I benefit from their cooperation, then I have an obligation to do my share” (pp. 185-186). Eminent ethicist, John Rawls cites this argument favorably (1971) 1999).

There are three reasons why honorary authorship is regarded as unethical. First, a publication that is not genuinely earned may falsely represent the individuals’ expertise. Second, due to the gift, the person is perceived as being more skilled than his or her colleague who has not published. This gives the person an unfair advantage professionally over their colleague while applying for jobs or appearing for an interview or for promotion. Third, such an individual is perceived to have a false level of competence and will be expected to accomplish tasks that may be outside the range of their expertise. Finally, one sad and salutary note is to point out the way several senior scientists have had their later careers damaged by accepting honorary authorship on articles that turned out to be tarnished. By accepting such authorship, several researchers have suffered the embarrassment of knowing little if anything about the data it included, or worse, of being associated with fabricated data. For example, Geoffrey Chamberlain, the then President of the Royal College of Obstetrics and Gynecology, was cited as a co-author in a paper by Malcolm Pearce, the obstetrician who falsely claimed to have performed the first intra-uterine transplant of an ectopic pregnancy. In his defense, Chamberlain stated that “the head of department’s name is always put on reports out of politeness. I was not part of this work, but I have always trusted

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Mr. Pearce” (Sheikh, 2000, p. 426). The recent scare linking autism and the measles, mumps, and rubella vaccine saga in the United Kingdom is also a case in point (Deer, 2011; Fitzpatrick, 2008).

Many journal editors have called for honorary authorship’s elimination, appealing to researchers both on deontological grounds—that the practice is fraudulent—and on consequentialist considerations—that the practice may be something of a poisoned chalice—as was the case with Geoffrey Chamberlain’s much publicized fall from grace (Smith, 1994). Researchers have typically based their defense on the morally suspect argument that the utilitarian ethic is at work and that the end (publications benefit the progress of science because a published work creates opportunities for it to be replicated and built upon) justifies the means.

Although honorary authorship is generally frowned upon, there is a counter-view as well. Some researchers believe that today, research groups have a complex and tangled structure. When some individuals are working on research and publication, others in the group are carrying out their routine duties and responsibilities (basically non-author tasks), allowing the authors to carry on leisurely with research and writing work. For example, a faculty member agrees to advise all students in the department so that a colleague can publish a paper that includes the faculty member as a co-author. This, they think, should be construed as a “passive contribution” to overall scientific goal and should be rewarded with authorship (Athanasoulis, 2000).

Conclusion

As science has grown more complex, the number of joint or multi-authored journal articles has increased dramatically. Although such authorship inflation has been attributed to a number of factors including building collegiality, increasing methodological sophistication, an expansion in multidisciplinary research, growing opportunities to collaborate internationally facilitated by the Internet, the simplest explanation for such an increase is that the pressure to publish has grown (Woods, Youn, & Johanson, 2010). Publication has become critical in defining success in academic careers.

Administrators expect more publications from their faculty today and, because of this force scholars are forming publishing teams to churn out more articles. Additionally, research audit regimes have intensified academic productivity either through government-backed rating systems (e.g. Australia, Hong Kong, New Zealand, and the UK) or direct incentive systems (e.g. South Africa and China). As pressure publishing increases in importance, misconduct also increases (Bennett & Taylor, 2003). The increase in multiple authorships in combination with the pressure to publish within academia has precipitated various unethical authorship practices.

One major disreputable activity discussed here is honorary authorship in which a person (or persons) is listed as an author but has not provided any significant assistance to a study. Such publication misconduct is widespread among the scientific community and tales of bogus authorship often occur in the sciences (Sokol, 2008) in part because there is not one universally recognized authorship standard for all of disciplines. It may not be uncommon for one person to do virtually all the work, another to give useful feedback, another to glance at the final version, while yet another would be just someone who worked in the same department and did not contribute to the study but who needed a publication because of an upcoming tenure review—and all could be co-authors of the published manuscript. “It happens all the time” (Sokol, 2008, p. 336) and it appears to be happening more frequently as the number of authors per paper indicates.

Authorship assigns responsibility for the work, and it is fair that only those who have actively participated in the work to a significant degree should benefit from being an author. Research by Bozeman and Youtie (2015) shows that there is no consensus on who deserves authorship or on what

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type of contribution suffices for co-authorship award. Far from being a simple decision, authorship has
become an increasingly complicated issue as research collaborations proliferate, the importance of
citations for tenure and grants persists, and no agreement on what constitutes authorship continues.

To address these issues a number of authorship guidelines have been developed. Perhaps the
most widely recognized code is that of the ICMJE described earlier. Importantly, Eisenberg et al. (2011,
2014) found a significantly lower acceptance of honorary authorship associated with adherence to the
ICMJE criteria in institutions that provided policies and education on publication ethics. Nevertheless,
clear-cut rules are certainly hard to implement and there will always be a degree of uncertainty in
defining the significance of a contribution. Despite the increase in the number and prominence of such
protocols, they seem to not work (Goodman, 1994; Smith, 1997). This is because guidelines are just
that, guidelines, not regulations, and enforcement is practically impossible (Lozano, 2014).

In the 1990s as a response to the difficulties with defining authorship in science, some scientific
publishing stakeholders began to advocate for a “contributorship model” in which published articles
include a contributor list rather than an author byline and an acknowledgments section (Akhabue &
Lautenbach, 2010). Advocates of this model propose that doing so would better enable editors to elicit
actual contributions from authors and to convey a more accurate sense of each author’s responsibility for
the study. Similar approaches have been used to overcome social loafing in organizations. Social loafing
may occur when people feel they can get away with “taking it easy”—namely, under conditions in
which each individual’s contributions cannot be determined. A variety of studies on the practice of
public posting supports this idea (see Nordstrom, Lorenzi, & Hall, 1990). This research has found that
when each individual’s contribution to a task is displayed where it can be seen by others, people are less
likely to free ride than when only overall group performance is made available. In other words, the more
one’s individual contribution to a group effort is highlighted, the more pressure each person feels to
make a group contribution. Thus, social loafing can be overcome if one’s contributions to a task are
identified and potential slackers are not likely to loaf if they fear getting caught.

An author contribution statement serves at least two useful purposes: it clearly defines each
author’s role in the research and hence to some extent also their responsibility in the case of misconduct,
and also serves to discourage honorary authorship. The level of detail varies; for example, Bates, Anić,
Marusić, and Marusić (2004) noted that one journal asks authors to describe research contributions in
their own words whereas another journal requires authors to code their participation in a study into 11
categories: (1) conception and design of the study, (2) analysis and interpretation of data, (3) collection
or assembly of data, (4) statistical expertise, and (5) provision of study material or patients; (6)
drafting of the article or part of the article; (7) critical revision of the article for important intellectual content; (8)
obtaining funding; (9) administrative, technical, or logistic support; (10) guarantor of the study; and (11)
study supervision or coordination. Under some variations of this model, authors are also expected to
designate their functional role within the group (e.g., principal investigator, coinvestigator, statistician,
contributing author). It is argued that this additional layer of disclosure contributes to greater
transparency on the part of authors. While contributorship models have promise, it should be noted that
cowriters agree about each other’s contributions only about 30% of the time (Ilakovac, Fister, Marusic,
& Marusic, 2007) and Bozeman and Youtie (2016) point out that so far, the contributorship route has
not been shown to make much difference to serious problems.

Given that national guidelines and the contributorship model have had modest success;
institutions must consider other measures to address author inflation and the accompanying ethical
lapses. One such effort involves university-wide codes. Considerable attention has been paid to research
integrity leading to the development of institutional level procedures for ethical approval of research
proposals in most developed higher education systems. Such ethical approval procedures, however, have

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tended to focus on the treatment of research subjects (e.g., human subjects research review committee) but rarely consider authorship issues. University guidelines could equate honorary authorship with research misconduct and institutions should make the effort to clarify and unify codes of conduct, and, most importantly, ensure that scientists, particularly those at the beginning of their careers, are informed of the procedures and appreciate the importance of the issue.

A second measure is that the culture stressing publication and citation metrics (i.e., “publish or perish”) must be reassessed. Changing an institution’s culture is a long and difficult process. Institutional culture resists change for all the reasons that it is a powerful influence on behavior—it embodies the institution’s basic values, it is often taken for granted, and it is typically most effectively communicated through stories or other symbols. When administrators attempt to change their culture, they are attempting to change faculty’s basic assumptions about what is and is not appropriate behavior in the university.

As more universities adopt the post-tenure review process, there will likely be additional publishing pressures beyond the often-dreaded tenure process. The emphasis on publications in obtaining funding, in achieving academic career success, and the importance given to them by accrediting bodies must change however, in the foreseeable future it is doubtful that such change will become a reality. This could possibly be best addressed by the various accrediting agencies.

Finally, as part of the organizational change in culture, Deans and Department Chairs could require a certain number of articles be “sole author” publications. So, for example, if a department required seven publications for tenure and promotion to Associate Professor, the department might require two of those to be written solely by the faculty member applying for tenure and promotion. Of course, administrators should be prepared for faculty backlash complaining that they are encouraged to collaborate and yet sole authorship papers run counter to the emphasis on collaboration and teamwork emphasized by most administrators.

Obviously, there is no clear-cut solution to this issue. However, the authors see this as an ethical issue that has not been dealt with (or rarely even discussed) that should be addressed. Perhaps as this issue emerges, a model approach will develop and become standard practice in academia.

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