

# Letter to the Editor: Respecting the Plurality of Value and the Messiness of Scientific Practice

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## Letter to the Editor: Respecting the Plurality of Value and the Messiness of Scientific Practice

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### ABSTRACT

Evaluations of authorship and recommendations for authorship policies best heed the plurality of valuation cultures that traverse scientific practices and respect the messiness of scientific practices, for those are reflected in authorship and authorship sequence decisions.

### KEYWORDS

Authorship; collaboration; philosophy of science; publication; public policy; science policy

Borenstein and Shamoo (2015) diagnose a continuing misfit in science between credit distribution through authorship and contributions to scientific and knowledge production work in the context of growing collaborations. I wholeheartedly support their point that the cultures of rewards are based upon individualistic perceptions of knowledge production, while the practice of science, and especially the physical and biomedical sciences and engineering, is increasingly collective, collaborative, and rooted in team work. This creates situations in which articles are now listing as much as 5,154 authors, all listed individually in print—a new record set this year (Aad et al., 2015). In this particular article, only 8.5 pages of text are reserved for the manuscript, while the author list takes up the remainder of the 33 pages. Collaboration is indeed on the rise, not only in physics, but in almost all disciplines (Vermeulen, Parker, and Penders, 2013; Wuchty, Jones, and Uzzi 2007).

This creates logistical problems for the production of articles (and their readability) and provides strong suggestions for the inflation of authorship and the accompanying accountability for the performed research. However, does it also mean that this is an ill reflection of the complex, large, collaborative practice that resulted in this article? It is very likely that not all 5,000 + authors participated in the writing of the 8.5 pages of text. Borenstein and Shamoo (2015) follow Resnik (1997) and many others in proposing that we should differentiate between authors and contributors and that more transparency, displaying the types of contribution each contributor made, making it more accessible to readers what the exact relationship between each

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A reply to Borenstein and Shamoo.

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individual and the work upon which (s)he is listed is. This would radically reduce the list of authors to those only engaged in writing, and would create a list of contributors who contributed in other very meaningful ways.

This suggestion hides two assumptions about scientific work which are problematic. The first is the implicit valuing of writing over other academic activities. The value of writing in the hierarchy of all activities that comprise the practice of knowledge production differs significantly across field and sectors. Those engaged primarily in qualitative and theoretical work view writing as the key or core activity in the production of knowledge. It is where arguments, theories, concepts come together and true scholarship finds its home. Engineers, laboratory scientists or field scientists may disagree and value the design of a study, the conduct of an experiment, the maintenance of a tool or the critical scrutiny of a data set as high, or higher. Borenstein and Shamoo (2015) wish to bring authorship “back to a more traditional definition of an author, which is still prevalent colloquially, in some disciplines, and in the realm of book publishing” (p. 275). Different valuation cultures exist in different disciplines, and Borenstein and Shamoo’s suggestion hints at imposing a valuation culture predominantly found in the humanities (and presumably this journal) upon the sciences.

Second, Borenstein and Shamoo (2015) neglect the messiness of scientific practice. The social study of science has demonstrated through a long tradition of laboratory studies that scientists are tinkerers (e.g., Knorr-Cetina, 1979). The construction and execution of experiments or the drafting of theories or hypotheses to be tested are not predictable processes. They require many small unknown interventions, materially, rhetorically, or otherwise, to make data, information, or knowledge. This generates the messy character that is inherent to scientific practices, creates situations in which the success of a certain line of inquiry cannot be planned or predicted and rather is made through theoretical and material labor. Regularly, it is not exactly known whose suggestion tipped the scales, who contributed significantly, and who did not. The type, as well as the weight of a contribution, is more often than not unknown and unknowable. The messiness and plurality of scientific practice is reflected in the difficulties of determining authorship and authorship sequence. This messiness is very much incompatible with highly protocolized taxonomies of contributions in every form (e.g., Allen et al., 2014), since these presuppose participants’ ability to draw clear and precise lines between contributions.

Further complicating the issue of authorship in the era of large scale, collaborative science, are shifting norms for who qualifies as a legitimate collaborator and, flowing from this, as a legitimate author. Consider, for instance, the technician. Shapin (1989) has argued that the technician has been subjected to different moral economies valuing his or her contribution to science, thereby determining the technician’s visibility in science. Technicians originated as servants, without credibility in and of themselves.

More recently, in modern laboratories or experimental settings, the line between scientist and technician is blurry and permeable. Technicians increasingly appear as authors, not because they are doing different things, possess different skills or expertise, but because we have come to value their contributions differently. Next to technicians, other occupants of the laboratory are increasingly valued for their contributions, ranging from trainees and students to patients and study participants.

The messiness of science means that it is not just the readers of papers who cannot distinguish between the authors' roles, rather scientists cannot and can never be fully sure themselves. Resnik (1997) claims that authorship is imprecise; but perhaps this is a requirement. Of course, authorship issues may legitimately reflect questionable research practices. Guest and ghost authors are not public displays of the messiness of science, but of power distributions negatively influencing the careers of many young scientists (e.g., Müller, 2012). Many, if not most, of the difficulties associated with assigning authorship and determining author sequence are indicative of the performativity of evaluation cultures (Rushforth and de Rijcke, 2015) and Borenstein and Shamoo (2015) have recognised that, whether in the form of authors, or as authors and contributors, the reward cultures active in science warrant our continuous attention. In this endeavor, however, we ought to heed the diverse valuation cultures that are associated with writing and authorship, as well as the inherent messiness of scientific work.

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