

Views on Life, the Universe, and Everything

Single Authors – an Exterminated Race

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Increasing Numbers by Increasing Credit?

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Over the last years the number of manuscripts published by single authors has diminished. This is despite single author articles having qualities unattainable in multi-author papers. They present an opportunity to publish opinionated and creative thoughts unbound by compromise. Moreover they represent a unique vision of the research process. This being said they may be undervalued, as they are appraised similarly to the multi-author manuscripts and this might call for a change in evaluation metrics.

Authorship patterns have shifted with a growing current trend for teamwork making the sole-author manuscript a rare species. This is in stark contrast to the historical precedent when between 1600 and the 1920's only solo-authorships were accepted, a practice that came to an end by the 1980's.^[1]

Accordingly, analysis of articles published in four prestigious American journals showed that single author articles were nearly extinct and that the average number of co-authors had increased from 4.5 in 1980 to 6.9 in 2000.^[2] Paradoxically, the possibilities for a single researcher to conduct research and write a manuscript have never been as great as they are now. Latest developments have extended the single analysis to multi-parametric platforms and the potential to outsource molecular methods and “omics” technologies on a fee-for-service basis with vastly improved open-source and web-based data mining resources have facilitated an individual's ability to address scientific questions.

So why do we observe a growth in co-authorship but not in single authorship? It may reflect countering preferences for the publication of ever more comprehensive studies, combining diverse specializations to an extent that it is difficult for an individual author to have the knowledge to complete all aspects of the study themselves; hence a requirement for larger and more diverse teams.^[3,4] Research demands

constant innovation, but this may be counterproductive if it comes at the cost of driving specialization to the extent that we lack individuals appreciating the strengths and weaknesses of a myriad of methods, capable of thinking with broad scope to communicate the overall picture.

Another explanation for the growth in number of authors per article might be the long-standing “Publish or perish” problem, whereby a researcher's career path is principally influenced by publication productivity. This is a arguably not a problem, but a fair selection pressure to be applied so that science benefits from hard work, however it can be problematic if it becomes the dominant motivator. Continuous publication of cited manuscripts is needed to maintain a favorable evaluation of the researcher's impact (described by citations) and the number of articles is often a dominant metric used in promotion and funding reviews.^[5] This constant pressure to publish might stimulate the criticized practice of honorary authorships, that is vulnerable to the mention of those with a questionable contribution.

Notably, scientific manuscripts in high impact journals have a greater number of authors and though there may be situations where authorship is generously attributed to help widen prestige it is also true that many articles in high impact journals reflect very extensive projects that have required more authors.^[6-8]

However Kevin Hallock from Boston University School of Medicine stated “The effort and initiative required to publish alone suggests an independent and tenacious scientist – both highly desirable qualities in any researcher”.^[9] Since a single authorship provides evidence of a thorough understanding of the relevant scientific processes one idea might be to require that all Ph.D. students obtain at least one single-authorship manuscript. In line with this idea, Enrico Fermi used to require his PhD students to submit results for publication in their name alone lest inclusion of a famous

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author might favor automatic acceptance rather than rigorous review.^[10] Additionally since senior scientist/last authors are often responsible for the validity of the work, even if they do not necessarily perform the experiment themselves, preexisting experience with all parts of the scientific process, e.g. as shown through solo-authorship, could be considered a prerequisite that provides appropriate authority.

Although single authors are not capable of the same amount of work as a large team, they have an important role in allowing insightful opinionated arguments that can stimulate much debate (even risk significant political turmoil),^[11] allowing examples of highly creative and laudable individualistic approaches to fundamental questions to be appropriately attributed.^[12] In line F. Scott Fitzgerald stated that “no grand idea was ever born in a conference”.^[13] Moreover should we be concerned that single authorships are diminishing more in the Sciences than in the Humanities?^[14,15]

Today it might be difficult for one scientist to take charge of every part of the process involved in a study as a result of the need for multidisciplinary. However for those that do, then our current evaluation system fails to acknowledge the true value of single author work as it tends to reward a coauthor similarly to the single author.^[16] This reduces the encouragement to write solo papers, also because being a part of a group can generate more “returns” as more authors can contribute to (legitimate) self-citation and produce a higher number of publications leading to a higher impact. Therefore, individuals may consider that the potential advantages of being a sole author are few.

An exterminated race or not, single authors are not to be overlooked. Single authors may not only show a unique understanding of scientific work but such individualism also encourages creativity and the chance to be opinionated in a fully responsible manner. The scientific community could

benefit from encouraging solo authors. As it is now, the evaluation metrics needs to be reassessed and modified in a way so that there is an element of reward for the single authors. Sole-searchers are invited to help save the threatened single-author species – we need you.

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