Recommended Guidelines for Authorship, Awarding Credit, and Intellectual Property Rights

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Although still more common in other disciplines (Henriksen 2016), the number of multi-authored articles is growing rapidly in political science and has now become the mode (Metz 2017: 158). As recently noted in this journal, "rates of article coauthorship in leading political science journals have grown spectacularly since the 1950s – with increases from 638% to 1,739% depending on the journal" (King, Kuriwaki, and Park 2020: 538, referencing Teele and Thelen 2017). Despite this decisive shift towards coauthorship, we lack established disciplinary norms for awarding credit based on participation in multi-person research activities. But as coauthorship grows, so too does the need for guidance on how to navigate the ethical complexities, potential interpersonal conflicts, and scientific obligations involved.

The purpose of this note is twofold: first, to bring to the attention of political scientists standard coauthorship guidelines used in other disciplines; and second, to articulate a set of principles for managing coauthorship and collaborations. The latter draw on guidelines established by other disciplines as well as my own experience over decades of collaborations, resulting in coauthorships with dozens of individuals from multiple disciplines. Some of these have been more successful than others. The less successful have naturally been particularly instructive and provided the impetus for writing down my own guidelines; these have been circulated and discussed professionally and adopted by selected research units in political science (e.g. Shapiro 2019).

The goals of a coauthorship arrangement include at least three distinct types of outcomes. First, when teams of scholars work together, authorship credit should be awarded fairly. There are many reasons for this, not least of which is that authorship is the currency of the academy and of essential

value for appointments and promotions. A second kind of outcome concerns relations among group members: here, the goal is to end the collaboration on a sufficiently cordial note that participants potentially continue to engage in joint research activities in the future. Some of the recommendations that follow are meant to achieve that end; no one wants to walk away from a collaboration feeling regret that they ever participated in the project or determined never to work again with that particular group of collaborators. The third and final goal of a coauthorship arrangement is to identify the responsible parties in the event of accusations of scientific misconduct. Although uncommon, when they occur, these are of significance to those involved and to the academic community more broadly.

In what follows, I designate recommended guidelines in courier font.

Four general criteria for authorship

We begin with a central document articulating principles of coauthorship: the International Committee of Medical Journal Editors (ICMJE)'s "Defining the Role of Authors and Contributors," first published in 1985. The ICMJE guidelines have been adopted by numerous academic institutions: for instance, Washington University's "Policy for Authorship on Scientific and Scholarly Publications" (Washington University 2009) and Yale University's "Guidance on Authorship in Scholarly or Scientific Publications" (Yale University 2020). Many other universities and professional societies use them; indeed, if there exists a general fallback set of guidelines, it is represented by those of the ICMJE.

The ICMJE four criteria for authorship are:

`1)  participating in at least some aspect of the research process (research design, data collection, data analysis)` ***`and`***

2) writing or revising all or part of the paper and contributing significant intellectual content *and*

3) critically reviewing the entire paper prior to submission and publication *and*

4) publicly accepting responsibility for the paper and the results.

All four must obtain for an individual to receive designation as an author, and all persons who meet these criteria must receive recognition as authors. Persons involved in a research project who do not meet the four criteria should receive recognition in the acknowledgements. For instance, an individual who raises research funds but does not participate in the other listed activities should receive acknowledgement, not authorship; likewise, an individual who assists in data collection but neither participates in the write-up nor reviews the paper prior to submission should receive acknowledgement, not authorship.

The ICMJE guidelines ensure that individuals who receive authorship take responsibility for final paper – and hence can be held responsible if questions arise regarding the integrity of the research process. The guidelines also protect Ph.D. students from listing their supervisor as coauthor on projects on which the supervisor officially serves as Principal Investigator (P.I.) – due to the requirements of a funding agency, for instance – but whose intellectual content and execution are undertaken by the student. In other words, the guidelines are meant to protect participants as well as the public interest.

Although widely adopted, the ICMJE guidelines do not reflect the only set of coauthorship standards used in academic research. Some disciplines –notably particle physics as well as the biomedical sciences – commonly see what is referred to as "hyperauthorship" (Cronin 2001), meaning massive numbers of persons designated as authors on the basis of small but essential project contributions. In high-energy physics, for instance, anyone working at the Large Hadron Collider at

CERN near Geneva, Switzerland when a discovery is made is included as an author on the resulting publication (Dance 2012: 591). Hyperauthorship solves the problem of awarding credit to everyone who contributes meaningfully to a project. However, it introduces the problem of identifying those responsible in the event of accusations of misconduct. Most persons listed as authors in massive collaborations have not read and cannot assume responsibility for the final publication. One solution lies with adopting designations other than "author." Rennie, Yank, and Emanuel (1997) advocate using "contributors" and "guarantors" in place of "author." This practice has been endorsed by the *British Medical Journal*, and a similar logic underlies requests by scientific publications that each author's contribution be clearly designated.

Hyperauthorship hardly represents a common phenomenon in political science: the average number of authors in the leading journals in our discipline is still under three (Teele and Thelen 2017: fig. 5, p. 438; also Henriksen 2016: fig. 2, p. 463), and articles published in political science journals that have even 10 authors are practically unknown. Nonetheless, a small but growing number of lab-like settings in our discipline feature research specialization and division of labor in the production of knowledge (McDermott and Hatemi 2010), whereby some participants conduct field work and collect data, others analyze it, and yet others undertake the final write-up of results. One example of a lab-like production of knowledge is represented by the "Metaketa" initiative of the Evidence in Governance and Politics (EGAP) network, whose publications include as many as two dozen authors (Dunning et al. 2019; Slough et al. 2020).

Arrangements such as EGAP's Metaketas sit uncomfortably with the four guidelines articulated above. For lab-like research projects, clearly designating who did what is essential. In addition, someone must accept responsibility for the whole of the final product. Perhaps this will be the corresponding author, research director(s), or project chair(s). This person (or persons)

should have been closely enough involved in all steps of the research process to participate knowledgeably in any investigation of research misconduct or fraud that may subsequently occur. They should be able to access and understand all the original data, all the code manipulating and analyzing it, and all the write-ups. And if scientific misconduct can be shown to have occurred, their reputations and careers are on the line. In exchange for greater responsibility, these individuals receive greater credit for the project, possibly via author ordering.[1]

Extension I: working with Ph.D.-level collaborators

The four criteria laid out above do not answer all questions about coauthorship. How should authors be ordered? Are participants free to reuse the data for other projects? How should conflicts be resolved? One way to organize our thinking about these subsidiary issues is according to the professional status of the coauthor(s). The justification for this is that in academic research, we provide more protections to individuals who are under the authority of others. In addition, the line dividing graduate student research assistants and coauthors can be blurry, and rules of adjudication for these interactions in particular need to be spelled out.

We turn first to collaborative arrangements with peers, among which I include post-doctoral fellows. For these, recommended guidelines are:

1) Authorship is alphabetically ordered and exceptions receive prior written agreement.

2) Individuals who receive authorship must be involved in all four core activities already laid out.

[1] In this note, I discuss author ordering only in passing. In political science, unlike some other disciplines (Frandsen and Nicolaisen 2010), author ordering is typically alphabetical. I take that as the standard and suggest altering it only if compelling reasons suggest doing so would be more fair.

3) This does not preclude a division of labor among authors, where one may be responsible for e.g. field activities and another for data analysis. These arrangements should be spelled out in a written, signed Memorandum of Understanding (MOU).

4) The MOU should be written before project work begins and should be reviewed from time to time as it proceeds.

5) When participants are not able to assume full intellectual responsibility for all portions of the research, the nature of the contribution made by each should be clearly spelled out, typically in the first footnote in the publication.

6) Individuals who do not participate in all four activities listed above receive acknowledgement but not authorship. (The main aim of this is to prevent faculty who raise funds from being included automatically as authors.)

7) Collaborators with authorship status on a project may freely discuss the project in the public domain (blogs, interviews, personal homepage, newspaper articles, etc).

8) Public discussion of a project should acknowledge the project, all other authors (as feasible), and funding sources, and should promptly (within 48 hours of posting,

publication, or execution) be made available to other authors.

9) Written policy briefs reporting research results must be approved in advance by all project authors.

10) Subsequent or auxiliary projects by all or any of the project authors that reuse data or main ideas are embargoed from publication until acceptance for publication in a peer-reviewed journal of the core project paper(s), as defined by the MOU.

11) Subsequent or auxiliary projects by all or any of the project authors that reuse data or main ideas will acknowledge the original project and its authors.

12) Collaborators on one project may (or may not) be invited to participate on subsequent or auxiliary projects that reuse data or main ideas. This is at the discretion of individual participants.

13) Data collected for a project is the collective property of all coauthors until its release into the public domain. It will be shared with others before then only with the agreement of all coauthors. Sharing entails a Non-Disclosure Agreement (NDA).

14) Anyone with authorship status on a project that includes original data collection is expected to participate actively in the preparation of the dataset and codebook for public release (or to supply funding to cover their share).

15) Data should be released into the public domain within a specified period of time after the end of data collection (typically one to three years), or with publication of the core research results, whichever occurs first.

Extension II: working with collaborators with P.I. status

A special set of considerations arises with respect to the title of Principal Investigator, meaning the individual responsible for raising funds for the research. P.I. status for U.S.-government funding (e.g. NSF, USAID) is available only to persons who have received a Ph.D. This is due to agency regulations and is not at the discretion of participants. Some other funding agencies impose similar regulations.

The following guidelines pertain here:

1) Where permissible by the funding agency, non-Ph.D.s (e.g. Ph.D. students) may serve as P.I.s. Students who serve as P.I.s on projects automatically enjoy author status.

2) Some projects have mixed funding; in these cases, some individuals may be P.I.s on some grants but not other. To protect themselves, participants should indicate their specific status for each grant on their c.v.s and other written materials. Ph.D. students in particular should take care not to claim P.I. status on a grant unless they actually enjoy that role.

3) Anyone with P.I. status on a project is expected to be involved in all four core activities laid out above.

4) P.I.s not involved in all four activities receive written acknowledgement but not authorship. For instance, when a faculty member serves as P.I. and a Ph.D. student plans and executes the research, analyzes the data, and writes up the results, the faculty member receives acknowledgement but not authorship. This occurs with NSF Doctoral Dissertation Research Improvement Grants, for instance.

5) Data and an accompanying codebook must be prepared and posted in the public domain according to the requirements of the funding agency, even if research results have not yet been published.

6) Graduate students and faculty members may be coauthors on a project without all necessarily serving as P.I.s; i.e. without being involved in the fund-raising process.

Extension III: collaborations with Ph.D. students

When faculty or post-doctoral fellows work with graduate students, there are clear power relations between the parties. In addition, Ph.D. students have less experience in the research process and may be unaware of some aspects. Hence, faculty-student collaborations are especially susceptible to misunderstandings and conflicts. It is important to protect students from intellectual exploitation by faculty; conversely, faculty have a right to a trial period and a reasonable level of performance by students before awarding them coauthorship on a project. Recommended guidelines for these relationships are:

1) Assisting with power calculations, data collection, analysis, and write-up under the supervision of a faculty member does not entitle a student to authorship status.

2) Whether a student receives authorship on a project is at the discretion of the faculty member directing it.

3) Authorship status will be granted to students in writing and cannot be revoked absent mutual agreement or outside review (e.g. by a departmental ombudsperson).

4) Ph.D. students who receive authorship must be involved in all four core activities laid out above.

5) Graduate students who are involved in all four core activities must receive authorship status.

6) Authorship is alphabetically ordered and exceptions should receive prior written agreement.

7) Ph.D. students with authorship status on a project may freely discuss the project in the public domain (blogs, interviews, personal homepage, newspaper articles, etc.) whereas those without must request written permission to do so. Students should be mindful not to release into the public domain data or intellectual content that is not theirs, or for which prior authorization by all project members is required.

8) Public discussion should acknowledge the project, all other authors (as feasible), and funding sources, and should promptly (within 48 hours of posting, publication, or execution) be made available to all authors.

9) Paid graduate student assistants not involved in all four activities listed above receive acknowledgement.

10) Graduate students who receive authorship status should expect to perform a great deal of unpaid labor on the project.

11) Authorship status is normally awarded only after a trial period of work that allows a graduate student to demonstrate genuine interest and the ability to provide significant intellectual input. This may entail a modest amount of unpaid labor (e.g. in the initial data collection or fund-raising phase of a project).

12) Ph.D. students who contribute substantial intellectual content to a project (designing the research, writing the pre-analysis plan, writing analytical content) should be offered the opportunity to participate as authors on a project. Acceptance of authorship status requires that they follow through and participate fully in all four core activities.

13) Graduate students who fail to follow through may, in rare cases, receive a modification of status (e.g. non-alphabetical author listing, with their names at the end). Any such modification requires consultation with a neutral, outside

person approved by both parties (e.g. a departmental ombudsperson).

14) Graduate students who perform replication activities receive acknowledgement but not authorship.

15) Graduate students with authorship status on a project that includes original data collection are expected to participate actively in the preparation of the dataset and codebook for public release.

16) Faculty should assume mentorship responsibility and bear in mind the professional interests of any graduate student with whom they work, regardless of whether they serve as the student's dissertation chair. They should actively advise the student of what they believe is in the best interests of the student. Where the professional interests of the student are different from the professional interests of the faculty member, the latter should disclose this to the student.

Extension IV: intellectual property rights

So far, this note has dealt with awarding authorship status on research outputs. Slightly different considerations regard intellectual property rights over intellectual objects (mainly datasets but also software) produced by teams of scholars. Clearly defined property rights prevent conflicts over the appropriate reuse of collectively-assembled objects. Recommended guidelines for these are:

1) Data and ideas that are generated during the course of a research project are the collective property of the persons who have authorship and/or P.I. status on the project;

2) Until release into the public domain, data will be shared with others only with the agreement of all authors and sharing entails a Non-Disclosure Agreement.

3) Any member of a research team may decide independently to undertake research that builds on or extends ideas from a project. There is no obligation to include all original team members in subsequent projects. Original project authors and P.I.s should be informed in a timely fashion of related work that will reuse intellectual property. Work that reuses data or main ideas is embargoed from publication until acceptance for publication in a peer-reviewed journal of the core paper from the original project, unless otherwise agreed in the MOU.

Extension V: coauthorship by Ph.D. students

If graduate students collaborate with others during their student years, can any part of the research output be included in their dissertations? This question inevitably arises with the proliferation of multi-authored research and the growing inclusion of Ph.D. students as coauthors. Traditionally, a Ph.D. dissertation is required to be the original research product of a single individual, and most departments still use this norm. But if their professional futures will mainly involve collaborations, it makes sense to encourage graduate students to become involved in multi-person research projects even while pursuing their degrees. Yet we do not want this to jeopardize their own research or time-to-degree. Is it possible for students to leverage collaborative research activities for their dissertations?

Collaborations require learning new norms and likewise new skills. A Ph.D. student can organize his research as he prefers, adopt whatever word processing software he wishes, and save (or discard) prior versions of his writing. All that changes in a collaboration: standard operating procedures must be adopted, and everyone must follow them if the work is to proceed smoothly, or indeed perhaps at all. Even directory structures must be aligned across the computers used by project participants (Gentzhow and Shapiro 2014). Learning these skills takes time and practice – time that Ph.D. students may have but assistant professors probably do not. So we should encourage our students to become involved in collaborations, either with peers or with their faculty supervisors, or both. At the same time, we also want to encourage each Ph.D. student to become an independent scholar able to formulate an interesting question, devise an appropriate research design, and actually do the work to produce a publishable result.

In balancing these considerations, departments and individual faculty will make their own decisions about whether it is appropriate to accept collaborative output as part of a dissertation. The guidelines I have adopted for my students are:

1) Ph.D. students are encouraged to engage in collaborative research projects; when doing so, they should operate on the basis of a written, signed Memorandum of Understanding that lays out the specific responsibilities and commitments of all parties.
2) Ph.D. students should be aware that they are likely not to receive as much credit as their coauthors in projects with faculty collaborators, particularly if the faculty members are tenured. Thus, they should limit their involvement in such

projects. Ph.D. students who collaborate with peers, on the other hand, are likely to benefit professionally to a larger degree.

3) Ph.D. students writing a dissertation using the three-paper model must include at least one single-authored paper that showcases their ability to work independently. They may include two coauthored papers in their dissertations, although they are discouraged from including two papers coauthored with senior faculty (as opposed to graduate student or untenured peers).

Final remarks: the value of collaborative social science

The need for written guidelines regarding coauthorship and collaborative arrangements has increased with the rapid growth of such arrangements. Most empirical political science that appears in top journals is now multi-authored. This is part of a broader and longer process of the "scientization" of our discipline: we are undergoing a lengthy transition from the single-authored, humanistic interpretation of political phenomena to their multi-authored, quantitative, and rigorous assessment. As a discipline, we are struggling with how to value collaborations. The issue arises at every career stage, from first appointment to tenure and promotion. As this note has sought to indicate, successful collaborations require planning and interpersonal as well as professional judgement. They do not just happen, and navigating them involves skills that many of us will decide to invest in. We should reward the ability to work as part of a larger team effort in the collective production of new knowledge. Likewise, we should consider what guidelines will facilitate these arrangements and make them more likely to succeed.

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