

| | | | | |
|--------|--|-----|---------|--------------|
| Title: | Criteria for authorship in outputs of research, innovation of scholarly endeavours | | | |
| | Version: | 0.3 | Author: | Steve Meaney |

Introduction

The authorship¹ of an output of a research, innovation or scholarly endeavour confers privileges, responsibilities and legal rights². The concept of authorship is broadly understood intuitively. However, variations in practice across fields and disciplines, and the continual evolution of collaborative practices and cross-disciplinary activities create difficulties in presenting a universal definition of authorship. Inappropriate assignment of authorship is an acknowledged challenge within academia and is perhaps the most common source of research integrity investigations.

Attribution of authorship must adhere to the principles of responsible research conduct i.e. only those who have significantly contributed to an output are considered as authors of that output. The assessment of contribution can be a complex task and an authorship agreement is a key supportive tool for decision making³.

Several formal frameworks have been described which aim to support the identification of who should be considered author for a particular output, although these typically are focused on traditional published academic outputs. The principle of these approaches is the systematic evaluation of the diverse contributions of all those contributing to the output and acknowledging these efforts. Similar approaches have been used to support decisions about the order of authorship, e.g. the Authorship Determination Scorecard of the Committee on Publication Ethics⁴. The advice of the senior contributors to the output, along with discipline specific custom and practice, often defines both the author list and order, rather than any formal or systematic consideration. This approach is not well aligned with good authorship and contribution practices.

As part of their efforts to promote transparency in authorship, many academic publications require the inclusion of author contribution statements, which identify the specific contributions of each author to the output. The CRediT (Contributor Roles Taxonomy) is perhaps the most widely known of these and is a category-based system which is designed to capture the details of each authors' contributions, from conceptualisation and design, to writing, supervision and funding.

¹ As per the TU Dublin Authorship and Publication policy, an *author* includes (but is not limited to) all creators, artists, performers, innovators, researchers and scholars who have solely, or as part of a collaborative effort, lead to a research, innovation or scholarship output

² COPE Council. COPE Discussion Document: Authorship. September 2019

³ See RESOP003 TU Dublin Guidelines for Authorship Agreements

⁴ See <https://www.apa.org/science/leadership/students/authorship-determination-scorecard.pdf>

| | | | | |
|--------|--|-----|---------|--------------|
| Title: | Criteria for authorship in outputs of research, innovation of scholarly endeavours | | | |
| | Version: | 0.3 | Author: | Steve Meaney |

Criteria for Authorship

The fundamental criteria for authorship are that only those who have made a significant creative or intellectual contribution to the output, and who take responsibility for the output are considered to be authors.

The following criteria⁵ must all be met for a person to be considered an author:

- i. A meaningful or substantial creative or intellectual contribution to the output must be made, in one or more of the following areas: conception and/or design, data collection and/or interpretation,
- ii. A direct contribution must be made to the preparation and review of the intellectual content of the output,
- iii. The person must approve the final output;
- iv. An acceptance of responsibility and accountability for the whole output, both at point of initial dissemination as well as in relation to future queries related to the accuracy, veracity or integrity of the output.

Those who have contributed to the output, but who do not meet the criteria noted above should be recognised in the acknowledged as contributors rather than authors, noting that named individuals may request that they can withdraw their name. Note that Large Language Models (LLMs) and Artificial Intelligence (AI) tools such as OpenAI's ChatGPT, Anthropic's Claude and Google's Gemini cannot meet these criteria and may not be considered as authors. While AI may be used as a tool in many disciplines (e.g. data analysis, creative endeavours) they cannot be included as authors in any output of the University⁶.

Codifying a 'meaningful or substantial contribution' may be challenging. Differences in interpretation may increase the risk for poor authorship practices, i.e. ghost, gift and guest authorships. However, the application of the formal criteria noted above, in combination with a formal authorship agreement can mitigate against this risk. Although focused on medical writers, the GPP3 guidelines provide a useful working definition for substantial contributions as "*an important intellectual contribution, rather than technical assistance, without which the work, or an important part of the work, could not have been completed or the manuscript could not have been written and submitted for publication*"⁷.

⁵ Derived from the ICMJE, GPP3 and the 'Vancouver' protocol.

⁶ Guidance on the permitted use of LLM and AI tools in preparation of research outputs is available XXXXXX (under development),

⁷ Battisti WP *et al*, (2015), Good publication practice for communicating company-sponsored medical research: GPP3. *Ann Intern Med*; 163:461-4, <https://doi.org/10.7326/M15-0288>

| | | | | |
|--------|--|-----|---------|--------------|
| Title: | Criteria for authorship in outputs of research, innovation of scholarly endeavours | | | |
| | Version: | 0.3 | Author: | Steve Meaney |

Group and consortia authorship

In certain areas of activity (e.g. physics, medicine) it is established practice to include consortia that contribute to a research output, innovation or scholarly endeavour within the author list of that output, either via a consortia designation or via a comprehensive list of many hundreds of authors⁸. While the requirement for the inclusion of an author in such a list should be determined by reference to the key measure of a 'substantial contribution' it may be challenging to appropriately assess the contribution of a specific individual to such large-scale efforts. In this instance, the use of a formal authorship agreement supports the decision-making process in relation to authorship and may include a delegated author who represents all authors from a specific partner.

Non-academic authorship

The inclusion and participation of non-academic contributors in research, innovation or scholarly endeavours is common in many branches of inquiry, particularly those that involve participatory or co-creation designs, and the scope of patient and public involvement in research (PPI) continues to expand. Such involvement often meets the threshold for substantial contribution, as the work would be impossible without their involvement. Non-academic partners should be considered capable of meeting the criteria for authorship as described above, although alternate approaches (e.g. feedback through discussion of an output rather than a formal review) may be required to facilitate their authentic participation. Such authors should be fully informed of the responsibilities of authorship as part of any discussions or negotiations in relation to authorship. A formal authorship agreement can address many of the issues related to inclusion of non-academic persons as authors, and minimise risks related to improper (e.g. gift) authorship.

External writing services

In some fields, the use of technical or scientific writing services is common, in particular for authors who may not consider themselves sufficiently proficient in the English language. The requirement for any such contributors to be designated as authors of the output should be considered in the context of the magnitude of their contribution to the output. Simple technical contributions (e.g. grammar or proofreading, technical editing, reformatting) are not considered sufficient to merit authorship; rather the working definition of substantial contribution as defined above should be considered in decisions about authorship. The use of such services should be explicitly mentioned in the output generated as a result of their contribution.

⁸ The specific approach taken will depend on the policies of the venue for dissemination, e.g. journal policies.

| | | | |
|--------|--|-----|----------------------|
| Title: | Criteria for authorship in outputs of research, innovation of scholarly endeavours | | |
| | Version: | 0.3 | Author: Steve Meaney |

External service providers

The use of external contractors or agencies to support research, innovation or scholarly endeavours, via the provision of technical expertise or a commercial service (e.g. market research, chemical or biological analysis) would not be expected to meet the criteria for authorship. In cases where the engagements with an external partner are expected to be so extensive that they would meet the substantial contribution threshold noted above, these partners would be more appropriately categorised as collaborators rather than external service providers.