

## **What constitutes ethical international scientific writing collaboration, co-operation and partnerships in Hungary?**

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### **Abstract**

*The biggest difficulties in research and publishing in Central European countries arise from the heritage of former socialism which crumbled more than 20 years ago. Any forms of international research co-operations, partnerships or collaborations, such as common research projects and indeed even writing co-operations as one of sub-set of research collaborations, there exists a unique possibility to focus the available resources and to generate new ones. If we examine the ethical value of international writing cooperation we should first consider what the importance of the publication is. The success of scientific research needs efficient completion of at least three sub-processes: a good basic idea (hypothesis), conducting the necessary experiments successfully, and finally, successful presentation of the results. All of the sub-processes require scientists with specific and different intellectual skills and practices. If any scientist participates in any sub-process with important intellectual contribution, then authorship is considered to be ethical and the determination of authorship is the right and sole responsibility of scientists that participated in the whole process of the successful research from implementation to publication.*

**Keywords:** collaboration; English and science writing skills; Central and Eastern Europe; Hungarian Academy of Sciences; partnerships in science writing

### **How does collaboration apply to science?**

In science, collaboration, a partnership or co-operation (CPC) has its main purpose to move forward a proposal and to reach a common goal. From the point of view of scientific research this common goal can be different if we consider the possible forms of co-operation. Using a metaphor, scientific research can be likened to a plant and can be divided into three phases similar to the developmental phases of a plant. The seed can represent the germ of thought when one or more parties set up a hypothesis (CPC – Part 1). Then, in the next phase, these parties, together with others, establish and realize a research project (CPC – Part 2) to prove or reject the basic hypothesis, similar to the vegetative development of a plant from

seed. In the final phase the plant bursts into flower and seed in order that new plants can develop and complete the cycle which it initiated. This process symbolizes the last phase of scientific research when scientists establish writing or scientific research partnerships or CPC and publish their findings (CPC – Part 3). Publishing the results from research projects results in new hypotheses, similar to seedlings, and promotes the development of a new cycle of the 3-part process. From this description it is clear that all three phases are built on each other and that the successful realization of all phases is necessary for reaching and achieving the target of the scientific research. In each phase, common goals can be determined and scientists, who are the specialist of the subsets of the task to be solved in any one phase, work together to reach this common goal. Such a goal could take the form of a research project or a scientific publication, i.e., research or publishing CPC (Teixeira da Silva 2011a, 2011b, 2011d, 2012; Teixeira da Silva and Muscolo 2012; Zeng *et al.* 2011).

Science plays it integral role in society, and often the power and possibility of one is intricately interrelated to the other (Teixeira da Silva 2011c).

Social and political factors, like the fall of the Soviet Union and the democratization of the former socialist countries in Eastern Europe and their joining the EU, are likely to have influenced the ranking. The direction of this trend changed even during the last 10 years. According to the data of SCImago Journal and Country Rank (SJR; <http://www.scimagojr.com>) the number of documents, considering all subject areas, in Eastern European countries accounted for only 19% of the documents from Western European countries both in 1999 and 2009, although it increased by 60% in both regions during this period. In Eastern European countries CPC has a tradition; while in 1996 the number of international collaborations was almost the same in both regions, in 1999 it was 14.5% more in Eastern Europe compared to western countries although this lead decreased to 7% by 2009. There is no data regarding the number of co-operations between western and eastern parts of Europe nor is there any logical explanation as to why this decrease may have taken place. Regarding plant science, the percentage of documents with more than one country (international collaboration) was 7 and 10% lower in 1999 and 2009, respectively, in eastern European countries compared to western European countries. However, the number of documents accounted for only 18 or 22% of the total number of documents from western European countries in 1999 and 2009, respectively. Specifically, in Hungary, in the agricultural and biological sciences, as a result of the above-mentioned socio-political factors, and as it became increasingly important to publish in high level journals (a requirement for awarding a PhD degree), the number of research papers increased by 111% between 1999 and 2009 despite the number of international co-operations increasing by only 8% (<http://www.scimagojr.com/countryrank.php?area>).

In all of these analyses there is no explanation regarding the form that scientific collaboration or CPC can assume or its ethical nature.

This manuscript seeks to close that gap in our knowledge between how research is conducted, how scientific publishing is interpreted and achieved and an understanding of the decisions required to establish research and publishing ethical guidelines within Hungary as a sub-set of the Eastern bloc of EU countries.

### What difficulties are experienced by scientists in Hungary?

Although the increase in the number of publications in SCI journals of agricultural and biological sciences between 2005 and 2009 (<http://www.scimagojr.com/>) was 32% in Western European countries and 59% in Eastern European countries (38% in Hungary), the rate of documents from the Eastern block is still only 19% of the those from the Western block.

Scientists from Eastern European countries are interested academically to write and submit papers to English peer-reviewed journals; however, they have serious difficulties because of different factors. Scientists have little skill in writing science papers with skilful English. English revision services operate from abroad (at least in Hungary) and their costs can not be paid for by scientists since the expense of an average manuscript revision and editing is equivalent to a monthly salary. These expenses can not usually be financed from the budgets of research projects. In many cases, scientists try to publish their results in peer-reviewed journals with or without an Impact Factor® (IF) in their home country; however, the majority of peer-reviewed journals and even journals with IFs operate from non-Eastern European countries. Regarding plant science journals, within the agricultural and biological sciences, journals from the United States, United Kingdom and Netherlands fall into the top 10 in the journal ranking according to SJR in 2009 and only one journal (Preslia) from an Eastern European country (Czech Republic) is ranked in the top 100, in 78th place (<http://www.scimagojr.com/>).

### How do Hungarian scientists select an appropriate target journal?

Hungarian scientists tend to find the following factors important when selecting a target journal of choice (Table 1). The most important viewpoints of journal selection include whether the journal has an IF, or if it is listed on international data-bases. Also, a very important factor is that publication and submission should be free of charge; in most cases figures are printed in black and white because of the high costs of colour printing. During the selection of a journal the speed and ease of acceptance are also considered, as is the transmission of copyright.

**Table 1.** Factors which Hungarian scientists consider to be important when selecting a journal of choice.

Factor	Rank*	Importance**
Does the journal have an IF?	1	4
Is the journal listed on Thomson Reuter's ISI/SCI?	3	2
Is the journal listed on Elsevier's Scopus?	3	2
Is the journal listed on other data-bases?	1	5
Is the journal Open Access?	3	1
Does the journal have an international editorial board?	3	2
Are there publication or submission fees?	1	5
Is colour printing free?	1	4
If the journal is not Open Access, is there a paid free-view option?	3	2
Is copyright retained by the authors or transferred to the publisher?	2	3
What is the speed of acceptance?	2	3
Is the review process (i.e. acceptance) easy?	2	3
Others (please specify)		

\* Please rank factors as: 1 = most important, 2 = second most important, 3 = third most important, etc.

Importance should be placed on a scale of 1 to 5: 1 = not important (not necessary); 2 = slightly important; 3 = important; 4 = very important; 5 = extremely important (i.e., absolutely necessary)

IF = Impact Factor®

### What constitutes authorship to a scientist in Hungary and what are the ethical implications?

Ethical requirements for scientific publications are regulated in writing as part of the Rules of Scientific Research by each Hungarian university or research institute, and also at our university (University of Debrecen; 30/05/2002) (<http://www.unideb.hu/portal/hu/node/47>; only in Hungarian). According to this regulation, a publication is defined as a description of original scientific results which are realized by the authors, which aims to present the results of the scientists and promote the use of these results for and by other scientists. Determination of the order of authors is the task, responsibility and exclusive right of the participants and the results of a consensus. Authorship is considered to be unethical where there is a lack of important intellectual contribution (Table 2). The second author (JD) believes that the corollary is not true, i.e., if anyone who makes an important intellectual contribution to a paper but he/she is then not considered as a co-author, then this reflects ethical misconduct or unethical behaviour.

**Table 2.** Differences between what constitutes co-authorship in Hungary and as established by ICMJE.

Code of function/activity	ICMJE		University/Research Institute		Hungarian Academy of Sciences†	
	Eligible author*	Ethical**	Eligible author	Ethical	Eligible author	Ethical
1	Yes	✓	Yes	Yes	Yes	Yes
2	Yes	✓	Yes	Yes	Yes	Yes
3	Yes	✓	Yes	Yes	Yes	Yes
4	Yes	✓	Yes	Yes††	Yes	Yes
5	Yes	✓	Yes	Yes	Yes	Yes
6	No	✗	No	No	No	No
7	Yes	✓	Yes	Yes	Yes	Yes
8	Yes	✓	Yes	Yes	Yes	Yes
9	Yes	✓	Yes	Yes	Yes	Yes
10	No	✓	No	No	No	No
11	Yes	✓	Yes	Yes	Yes	Yes
12						

\* Yes = Eligible to be author; No = Not Eligible to be author.

\*\* ✓ = is ethical according to ICMJE; ✗ = is unethical according to ICMJE (2006; exploratory analysis in Teixeira da Silva 2011c).

† Although listed for HAS, the identical rules apply to all Hungarian universities and research institutes.

†† The rate of the contribution will be reflected in and determined by the order of authors; the importance of a contribution can not, in general, be measured as a per cent and is difficult to quantify

**Code of functions/activities:**

1. The person who designs the experiment

2. The person who does >50% of the research
  3. The person who does >25% of the research
  4. The person who does a small part (<5%) of the research
  5. All people who do ANY part of the research
  6. The supervisor (junior or senior professor) who does nothing
  7. The supervisor (junior or senior professor) who does at least one function
  8. The person who writes the paper
  9. The person who makes significant improvements to language AND scientific content
  10. An English teacher who revises the manuscript's English only
  11. A statistician who conducts stats analyses and analyses the data
  12. Others: please explain
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The Hungarian Academy of Sciences (HAS) takes responsibility for the preservation of morality and authenticity of Hungarian scientific research. The Science Ethics Code of the HAS (also available in English) ([http://mta.hu/data/cikk/12/68/86/cikk\\_126886/etikaikodexangol.pdf](http://mta.hu/data/cikk/12/68/86/cikk_126886/etikaikodexangol.pdf)) was accepted in 2010 and according to this codex “The person who, due to his or her scientific work, has given an important contribution to the planning or accomplishment of experiments, the evaluation and control of results shall be indicated as author. A position held in the institution or institute, or a role played in the financing of the research shall in itself not entitle anyone to pose as the author of the publication. Nor can honorary authorship be allowed.....The indication corresponding author may only be used by the consent of the other authors. Only those who have played a decisive or co-ordinating role in the communication may be indicated as such. ....It is an ethical misconduct to deny deserved authorship, insist on or grant undeserved authorships, and in general to indicate merits relating to authorship in a false way.” “...In the case of a suspicion of misconduct infringing scientific ethical standards starting and carrying out the procedure shall always be the obligation of the institution (university, research or other institution), where the researcher suspected of committing such misconduct is working.” HAS “...authorises its Science Ethics Committee to proceed upon request in all cases that injure or endanger the integrity of scientific research already on suspicion of a science ethical misconduct. In this role the Science Ethics Committee can also act as a forum of appeal in cases decided by the science ethic committees of research institutes, higher education, or other institutions and organisations.”

### **How is responsibility in research and publishing determined in Hungary?**

Fundamental moral and ethical principles of scientific research, such as honesty, reliability, objectivity, impartiality and independence, openness, duty of care for participants in and the subjects of research, candour in presenting the work of others and providing references, responsibility for future science generations, disinterest and impartial participation in scientific public life, are described in the Science Ethics Code of the HAS ([http://mta.hu/data/cikk/12/68/86/cikk\\_126886/etikai\\_kodex\\_angol\\_.pdf](http://mta.hu/data/cikk/12/68/86/cikk_126886/etikai_kodex_angol_.pdf)). The same document contains the guidelines for fulfillment of the research programme, among which the responsibility of the programme leader and the rules of communication of scientific research are explained.

With the considerations described in the codex of HAS, the structure of a programme, namely a vertical or horizontal structure of the command level, can be very different depending on the characteristics of the programme, on the participants and on the number of participants. Generally, the programme leader has the main coordinating power and main decision role but participants responsible for a sub-task have the right and responsibility to decide in it. “Within the research working group the free circulation of information relating to the research shall be ensured. During the execution of the research programme all participants shall be aware of what can be revealed on the research to persons outside the research.” ([http://mta.hu/data/cikk/12/68/86/cikk\\_126886/etikai\\_kodex\\_angol\\_.pdf](http://mta.hu/data/cikk/12/68/86/cikk_126886/etikai_kodex_angol_.pdf)). When the results are published, the determination of the authors, and the order of the authors are the results of a consensus of the participants in accordance with the guidelines and rules of HAS and universities or institutes. In general, the first author will be responsible for the sub-tasks assigned to other co-authors and from which the results will be derived for publication; the first author makes the largest contribution to the experiments. The programme leader will appear as the last author. However, these are not rules and can be different. The corresponding author selected by the consent of the other authors plays a decisive or coordinating role in the communication.

#### **What benefits do Hungarian authors receive?**

In Hungary, the importance of publication activity has been increasing but judging success depends on the subject area; it is very different inside the plant sciences (for example plant protection, plant breeding, plant cultivation, forestry, agricultural biotechnology, horticulture, etc. are represented by different scientific committees of HAS). The different scientific sections of HAS have decided minimal sciento-metric requirements (MSMRs) in each area for awarding the doctor of academy (a degree higher than a PhD degree). In these MSMRs one of the most important factors includes the publication activity of a scientist beside other factors ([http://mta.hu/iv\\_osztaly\\_cikkei/doktori-ugyek-121411](http://mta.hu/iv_osztaly_cikkei/doktori-ugyek-121411)). The scientific sections and inside each section the scientific committees have determined the publication requirements, as well, namely how many publications in high level journals are necessary, including journals with an IF and high level journals without an IF but which are of great importance in the science area. This latter group of journals are listed on the HAS web page but are available only in Hungarian. These recommendations by HAS scientific sections are accepted by all Hungarian universities and research institutes.

As a microcosmic example of the Hungarian profile, the CPC publications as a fraction of all CPC projects at CAAES is presented in Tables 3 and 4.

Scientists receive real benefits based on their publication success and academic activity. Although it has no direct influence on their salary but it is considered in accordance with the requirements of the HAS scientific committees during qualification of a scientist, during application for a higher academic position or for research grant or funding. Unethical behaviour is punishable (Table 5).

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### Conflicts of interest and declaration of ethics

The authors declare that there are no conflicts of interest (ethical, cultural, academic, financial, intellectual) between them or between them and their research institutes and/or funding bodies. This manuscript is not funded. All authors have contributed equally and have approved the final version of the manuscript for submission. Parts of the manuscript may appear in a similar series of manuscripts covering the topic around the world. Only data or information which was freely and publically available from web sites (in some cases only in Hungarian) and in the publication data-base of CAAES was used, and which were collected by Dr. Szilvia Vincze, who is the person responsible for this system.

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