Meta -Education and ***Peer-review*** **via Co-researching and Co-Learning**
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Purpose

The main objectives of this article are to 1) address the two seemingly unrelated issues of ***Meta - Education*** and ***Peer-reviewing,*** 2) suggest a methodology based on systemic/cybernetic relationships ***Co-researching and Co-Learning*** that may increase the effectiveness of both Meta-Education and Peer-reviewing, 3) briefly describe a program oriented to validate this suggestion, 4) describe the first project in this program and 5) generate an *internally integrated publication.* The later would support **knowledge integration** processes for both: authors and readers of the respective publication

Context and Questions: Meta-Education and Peer Review

Meta-Education, i.e. educating the educators, is frequently found in k12 education. Why is it less frequently found in Higher Education? Meta-education includes self-education which should be continuous education, especially in Higher Education, so why it has not been more frequently addressed? Why most Higher Education organizations have internal sub-organizations oriented to Continuing Education, but they do not frequently include continuous education for their own educators? Do they suppose that these processes are implicit in the explicit research of their lecturers, professors, their assistants, and associates? Why don't we make continuous self-education more explicit in Higher Education organization? Why don't we make it as a potential input to academic promotion as it actually is research measured by publications? Id there a methodology that would synergically related meta-education and research?

Concurrently, a seemingly an unrelated phenomenon has been happening, for a long time. In a survey of members of the Scientific Research Society, *"only 8% agreed that 'peer review works well as it is'."* (Chubin and Hackett, 1990; p.192).

This problem worsened, since then. Steen, Casadevall and Fang (Why Has the Number of Scientific Retractions Increased?, 2013) shows that "The number of retracted scientific publications has risen sharply." Richard Van Noorden (Publishers withdraw more than 120 gibberish papers, Conference proceedings removed from subscription databases after scientist reveals that they were computer-generated, 2014) affirmed that *"The publishers Springer and IEEE are removing more than 120 papers from their subscription services after a French researcher discovered that the works were computer-generated nonsense."* [Italics added]. The IIIS had to cancel one conference presentation in 2005, because of a similar situation. These are just few examples of the increasing of retractions in scholarly publishing.

Horrobin (2001) affirmed "A recent U.S. Supreme Court decision and an analysis of the peer review system substantiate complaints about this fundamental aspect of scientific research. Far

from filtering out junk science, peer review may be blocking the flow of innovation and corrupting public support of science."

Empirical studies have shown that assessments made by independent reviewers of papers submitted to journals and abstracts submitted to conferences generate a level of agreement among reviewers is about what is expected by chance alone Rothwell and Martyn[1] (2000), for example, analyzed the statistical correlations among reviewers' recommendations (made to two journals and two conferences) by analysis of variance and found out that for one journal "***was not significantly greater than that expected by chance" and, in general, agreement between reviewers "was little greater than would be expected by chance alone***." [Titalics and emphasis added].

Is it believable that with this kind of statistical studies, no more research is being done on "Peer Review", especially in the methodological and conceptual dimensions? Is there any answer or at least an attempt to answer this question?

Goldstein (How Science Works, 2000)[2] affirms that "Peer Review is one of the sacred pillars of the scientific edifice" and Horrobin (Something Rotten at the Core of Science?, 2001) write that "Peer Review is central to the organization of modern science…why not apply scientific [and engineering] methods to the peer review process" (Horrobin, 2001)

Who can understand and explain that the foundation and the principal backbone of scientific communication are failing and there is no more scientific research on how it may be made more effective? Why Peer Review is not being peer reviewed? Shouldn't this problem be addressed via methodological research using Action-Research, Action-Learning Action-Design, or any combinations of them?

The above mentioned citations are just a few examples of an increasing number of facts that are indicating that more research and reflections are urgently needed regarding knowledge and information quality assurance, in general, and, specifically, on Peer Review. "Peer Review is one of the sacred pillars of the scientific edifice. ***Why not apply peer review to current peer reviewing methodologies?*** To foster research and experience-based reflections with regard to peer review, the methodologies being used in it and the potential solutions to this very important problem is one of the two objectives of IIIS's program with regards to trying to address this problem by means or relating in a systemic/cybernetic way *Co-researching and Co-Learning*. The way we are suggesting and trying to evaluate its effectiveness would, potentially, also increase the effectiveness of *Meta-Education*, specifically in its component of *self-education*, *via co-researching and co-learning*

General Methodology

One of our objectives in this article is to suggest, in general terms, a methodology that may relate meta-education and research via publishing journal's special issues and multi-author books by

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[1] (Reproducibility of peer review in clinical neuroscience: Is agreement between reviewers any greater than would be expected by chance alone?, 2000)
[2] Referenced by (Horrobin, 2001)

means of cybernetically relating *Co-researching and Co-Learning.* These two activities are meta/educational and may increase the effectiveness of peer review, which, in turn, would improve the quality assurance processes in academic communication, which in turn would potentially support the effectiveness of meta-education and research activities.

The designing and implementation of this methodology will be supported by a general meta-methodology that combines *Action-Research, Action-Learning, and Action-Design.* The three of them will be related in a systemic/cybernetic way, via *incremental* planning which, hopefully, will be an adaptable one, *evolving* to toward an increased level of effectiveness.

The increments would be specific projects which may be intra-, inter- or trans-disciplinary ones. The first project or increment is being designed and implemented for the publication of a journal's special issue on "***Rigor and Inter-Disciplinary Communcation", which is*** being produced via *"**Co-researching and Co-Learning".*** The research in this case is being supported by:

1. Experience-based reflections,
2. Literature research,
3. Exploring and trying solutions suggested editors, researchers, reviewers, etc., as those suggested by the highly cited David Kaplan, mentioned above.
4. Case Studies
5. Case-based reasoning and reflections.
6. Other possible ways of doing research on the specific topic of *"Rigor and Inter-Disciplinary Communcation",* including quantitative research, mixed research, descriptive research, explanatory research, exploratory research, etc.

For a conceptual approach to the notion of "research", we recommend Jeremy Horne's (The Philosophy of Research, 2019)

Being the first project on *"Rigor and Inter-Disciplinary Communcation,* it is advisable to approach this trans-disciplinary topic with different disciplinary perspectives and oriented to a multi-disciplinary readership. This is why articles should be not just in an intra-disciplinary context, but also in inter- and trans-disciplinary intellectual environments and communication. This is why a multi-disciplinary organization, like the International Insitute of Informatics and Systemics provide a fertile environment to address this issue, via programs and projects oriented to address the design of effective methodologies to make explicit and programmatic issues related to meta-education in Higher Educations and Peer Review.

Programatic Orientation

The program to be shortly described in this article has two main objectives:

1. To address the issues related to *"**Co-Researching and Co-Learning (CRCL),*** is important in addressing the issues raised above.

2. To address several, if not many, of the **weaknesses of the Traditional Peer Review methodology**; which has been described by many authors, reviewers, editors and publishers. An important example is the highly cited author, David Kaplan (How to Fix Peer Review, 2005). Other examples are the references provided in Callaos's (Peer Reviewing: Weaknesses and Proposed Solutions, 2011)

A Systemic/Cybernetic Approach

A methodology based on David Kaplan's (How to Fix Peer Review, 2005) has been implemented, with measurable improvement of the peer reviewing process. Briefly, this methodology might be described as follows:

    a. Via **two-tier reviewing methodology** implemented by the International Insitute of Infomatics and systemic (IIIS) for its conferences which is shortly described at (Non-Blind (Open) and Double-Blind (Closed) Reviewing in IIIS Conferences, 2006), and

    b. Via three-tier reviewing methodologies for the IIIS's journals, which add anoher tier to the two-tier methodology described in the reference just given above, This thir tier is based on selecting the best 25%-35%, according to the conference in which the paper was presented and/or the external reviewers of the initially submitted article.

A Systemic/Cybernetic Approach to Meta-Education and Peer-Review

An Effective Peer Review is (should be), at least implicitly, a means for meta-education, especially in the self-education aspect of meta-education. A well conceived peer review may be perceived and conceived and one of the means of

1. Co-learning between reviewers and the author(s) of a given article.
   a. An *effective reviewer* has a

       i. *Passive learning*, via reading the article, and
       ii. An *active learning* via

   - Reflecting on the content of the article, and making a critical assessment of it,
   - Evaluating it and making a judgement for the editor by means of recommending the acceptance or the refusal of the article, and
   - Reasoning his/her judgement, and
   - Recommending the author how to improve the article in the case he/she recommend its acceptance or what the author may do to get the paper accepted.

   b. An *author caring* for the improvement of the article has also a

       i. Passive learning, via getting information about the content of his/her article

ii. Addressing the reviewer comments order improve the content of the article in what he/she agrees with the reviewer and preempting s similar reaction or opinion of the potential readers of the article related to the comments of the reviewer in which he disagree with him/her.

These passive and active learning by the reviewer and the author would reinforce each other if they are conceived in the context of a non-linear, or systemic/cybernetic means of communicating them. And, if if both: author and reviewers alternate their roles, via co-reviewing each other's article then (via, Peer-to-Peer Reviewing, as briefly described below) then they may form a ***dialectic whole via dialogical process***, where each of both articles are improved and co-research processes may emerge with a high probability, in our opinion. At least, this was my personal experience while learning from other authors; which opened new research perspectives for me, which results were included in the initial article. Consequently, it may be suggestible that co.learning via Participative Peer-to-Peer Reviewing provide a synergic cybernetic loop, which generates a dialectic whole (via dialogical process) with which one of the emergent properties is co-research and even group creativity or

Consequently, an effective co-learning, *similar* to that frequently observed between a student and his/her tutor or adviser, would certainly generate the same kind of co-research perceived. In many cases, between students and advisers, especially in PhD programs. Why two colleagues, who are peers and both interested in improving their respective articles, cannot alternate in roles similar to those of PhD students and advisors while working on dissertations? This simile may support what we mean (below) with Participative Peer-to-Peer Reviewing (PPPR) and may support a systemic/cybernetic conception of the relationships between self-education and peer-review as well as between co-research and co-learning, both via PPPR.

A Systemic/Cybernetic Approach

To meet the two objectives mentioned above, we are suggesting and planning to implement, via a systemic/cybernetic combination of *Action-Research, Action-Learning, and Action-Design*, a ***non-lineal model*** of participative *"Co-researching que Co-Learning"*, which usually has been addressed in a mostly linear model. This non-lineal model would support a ***systemic/cybernetic*** methodology instead of the ***systematic*** one, usually used in the traditional and mostly lineal model; which may, and have been, briefly be schematized as in Figure 1.

Through a combination of action-Research, Action-learning, Action-Design/implementation, and incremental planning, a methodology for the non-lineal model will be designed and implemented.

Non-lineal (systemic rather than systematic) methodology, that would support, initial project(s) to be implement for implementing the model shown in Figure 3 via a combination of Methodological Action-Research, Action-Learning and Action-Design/Action-Engineering, is shown in Figure 4
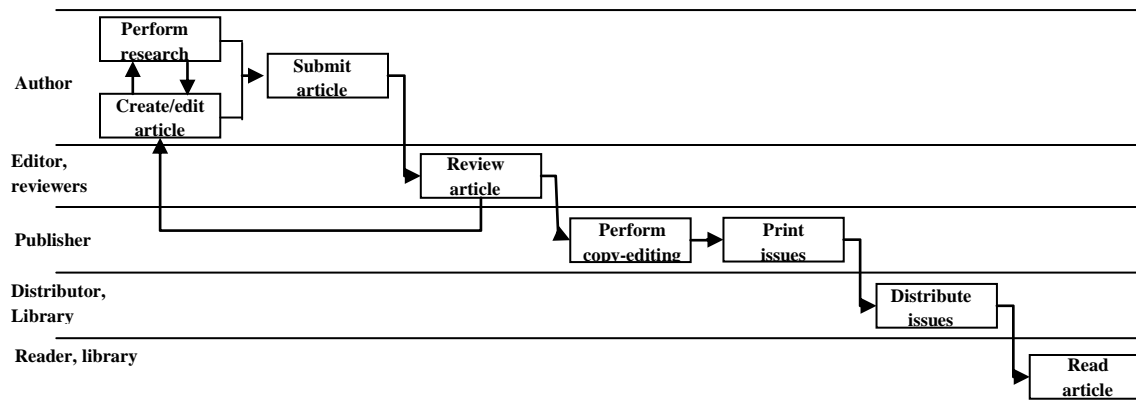
Figure 1: The Traditional *Lineal Model* (Source: (Hars, 2003). More details with regards to this model are provided in Callaos, N (Peer Reviewing: Weaknesses and Proposed Solutions, 2011).

In Figure 2, we summarized, even more, the traditional model shown in Figure 1, as provided by Alexander Hars (From Publishing to Knowledge Networks; Reinventing Online Knowledge Infrastructures, 2003)
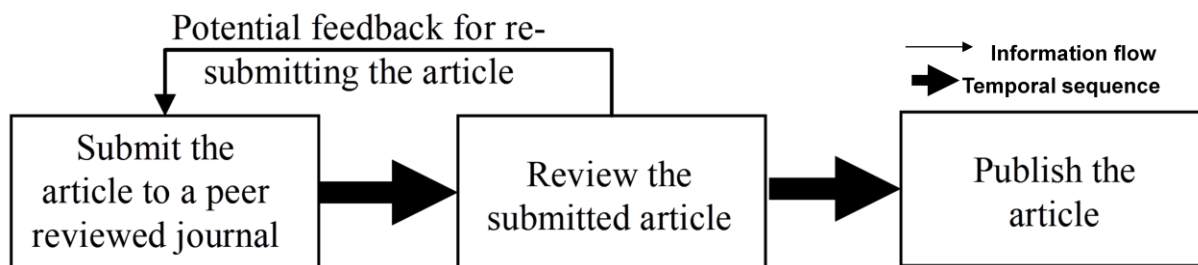

Figure 2: Traditional Serial Model, which support and is supported by *systematic* submitting/reviewing/publishing methodologies.

A highly simplified non-lineal model that may support and get supported by systemic/cybernetic methodologies for submitting/reviewing/publishing articles is shown in Figure 3.

The first methodological increment will be the implementation of the systemic/cybernetic methodology showed in Figure 4. This, in turn is supported by a Systemic/Cybernetic approach *to thinking and doing*, which is what is what is common to the supporting methodology that combines and related the methods of Action-Research, Action-Learning and Action-Design/Action-Engineering.

Three cybernetic iterations of the diagram shown in figure 4 is what we will are using in an initial publication supported by *Participative Peer-to-Peer Reviwing* (PPPR), via *"Co-researching, Co-Learning, and Co-Publishing" (CCCP)*. The co-publishing is not inserted in this initial project yet, but an organization has already created for it. (For more information regarding this issue ask, please, the author of this article)
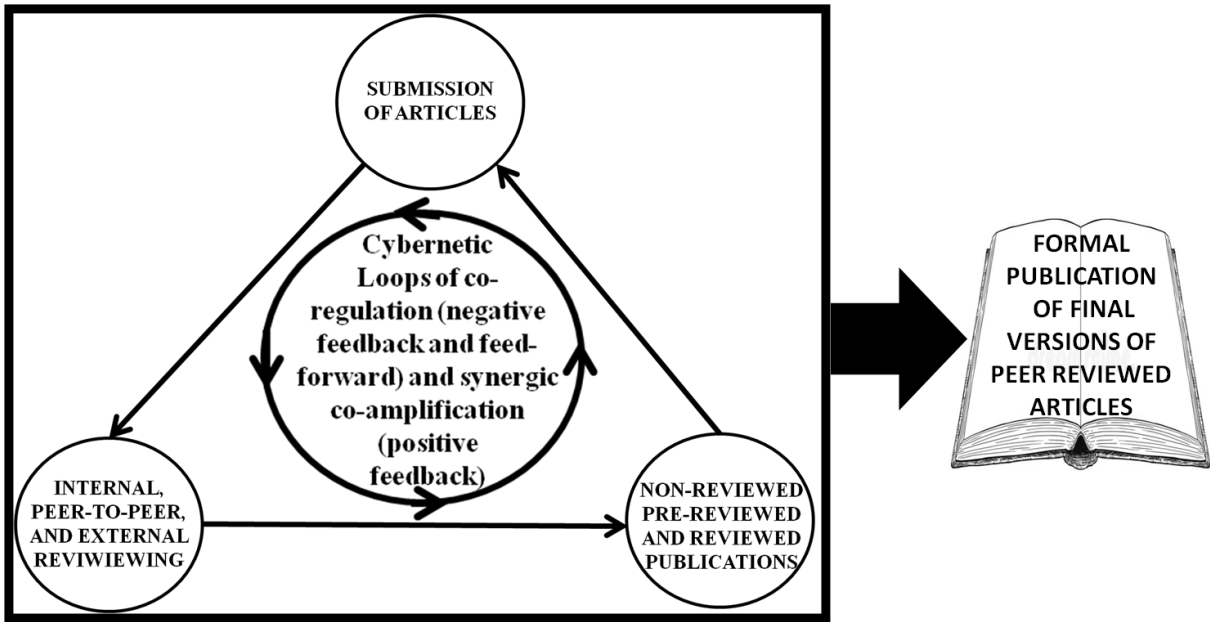
Figure 3: Non-lineal model that may support, and get supported, by a *systemic/cybernetic* methodology for submitting/reviewing/publishing articles
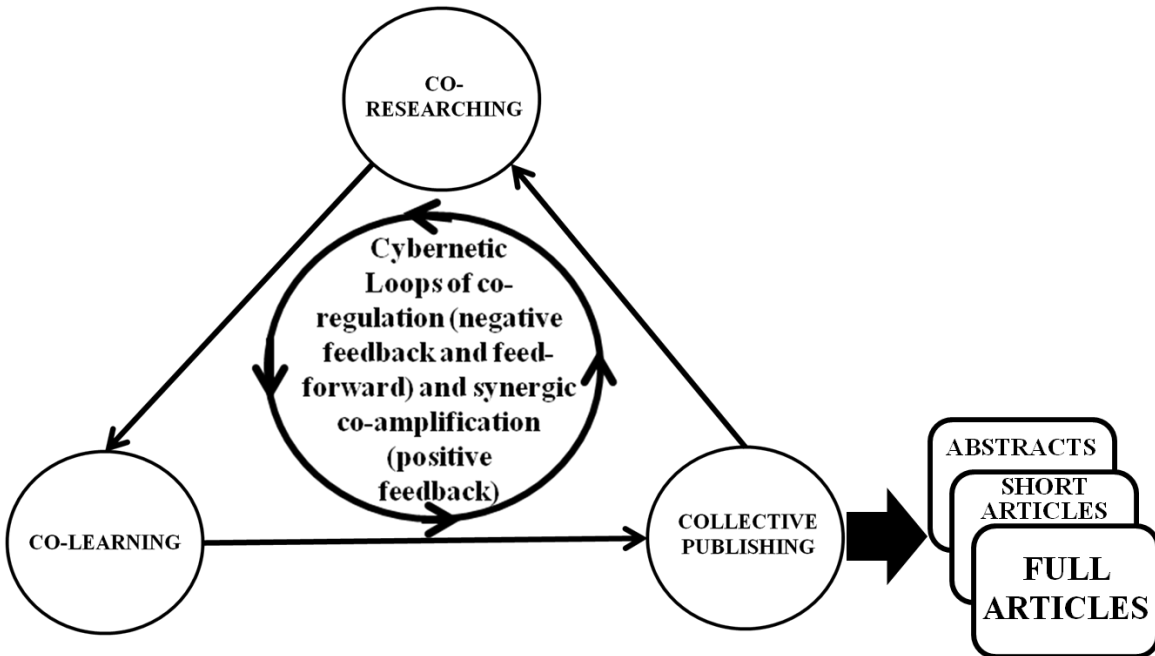

Figure 4: Non-lineal Methodology, that would support, and initial project (s) to be implemented via a combination of Methodological Action-Research, Action-Learning and Action-Design/Action-Engineering. Each one of these three methods is systemic/cybernetic one, similarly to between thinking and doing.

As it can be noticed, from figure 4, three publications would result from the methodology generally and schematically described in the mentioned figure. These publications are, on the

same topic, as follows, and in the same sequence, each belonging to one of the three cybernetic loops oriented to support bottom up integration, via a systemic methodology/process and toward a systemic product. These three publications are as follows:

1. A set of abstracts (100-300 words) related to the same topic and potentially related among them (bottom up integration). This represents an *informal* publication; which may be an appendix to the following two *formal* publications.
2. A set of short articles (800- 2000 words), also related to the same topic and *necessarily* related to each other. Each article should reference, at least, another article, in order
   a. To provide more details,
   b. To show agreement and commonalities via quoted common texts, and
   c. To show disagreement. Honest disagreements are also an effective means for learning and, consequently, of co-learning and co-researching, which might provide an adequate potential for bottom up integration of the collective work

3. A set of full articles, also related to the same topic and *necessarily* related to each other, by similar means as those mentioned in point 2.

A tentative more detailed diagram, related to Figure 4, and the three kinds of publications, is shown in Figure 5
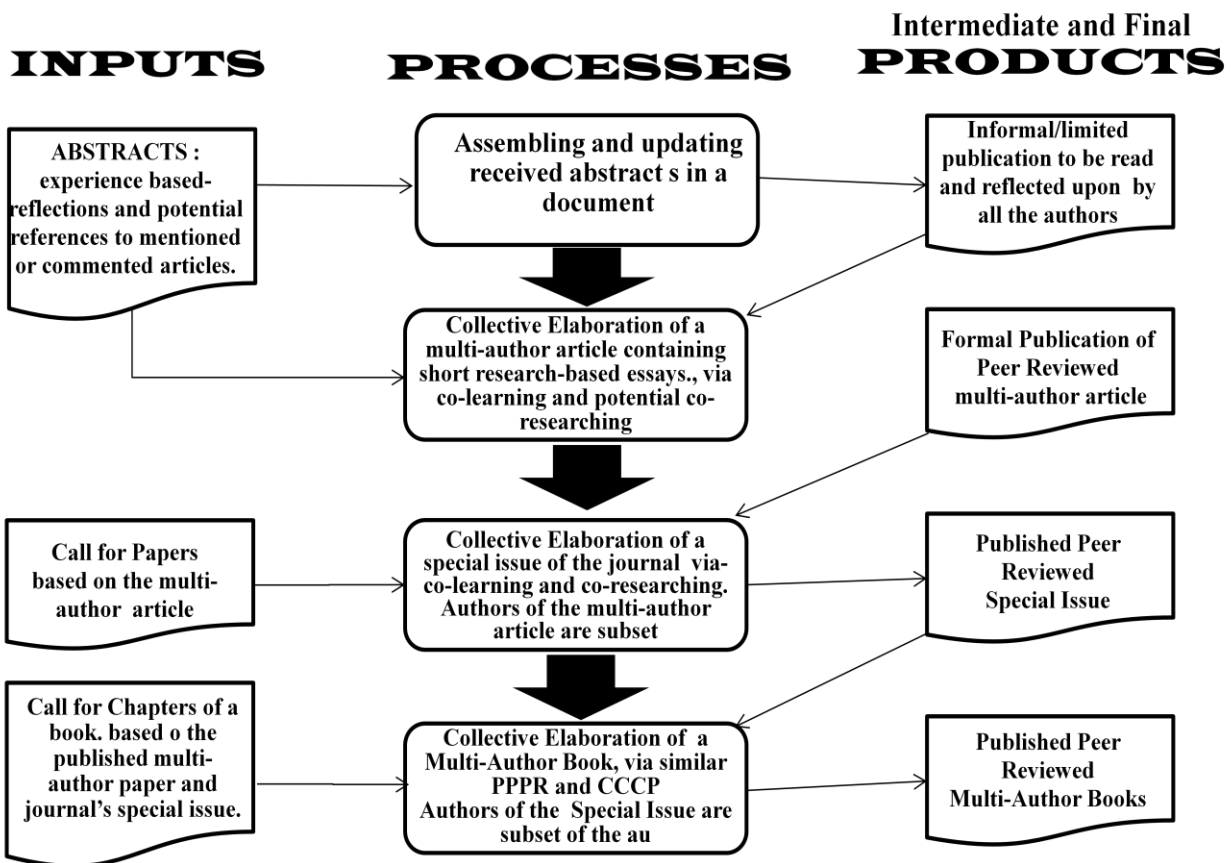

Figure 5: Special Articles. Journal's Special Issues and multi-author books, based Co-learning, Co-researching and Participative Peer-to Peer Reviewing in order to produce internal integrated articles, special issue and multi-author books with Internally Related Set of Articles