

Integrating Different Conceptions of the Notion of Conference

Nagib Callaos and Belkis Callaos

University Simon Bolivar and

The International Institute of Informatics and systemic (IIS)

N.callaos@iis.org

Abstract:

The purposes of this article is to show the differences between traditional and conversational conferences and to suggest that synergic effects might be produced when both models are adequately related in simultaneous events so cybernetic loops might be produced. The effectiveness of both approaches could increase if they are adequately related or oriented to the generation of processes that might integrate both models in the context of the same event, or chain of events.

The content of this article is based on a combination of experience, reflection, and action, using the methodologies of Action-Research/reflection, Action-Learning, and Action-Design. After ten years trying to relate these two approaches we learned that they are opposite, but not contradictory with each other. They are, or can be designed as polar opposites which would complement (and even require) each other in a synergic whole, with potential emergent properties as effective learning, interdisciplinary communication, and creativity via analogical thinking; which, when followed by logical thinking, is a source of knowledge creation and innovations generation. This is beneficial to both disciplinary and inter-disciplinary research.

In this article, knowledge is conceived as “justified belief” generated by a collective construction requiring effective communication for both disciplinary and interdisciplinary knowledge creation. In the later case, communication via *informal conversation* might be a necessary condition because disciplinary communication are usually more formal due to the respective disciplinary rigor, concepts, symbols, etc. Intra-disciplinary communication is usually based in what is common to the respective disciplinary researchers or professionals, which might not be common with other disciplines. Consequently, we will show that a combination of formal and informal communications channels are required for intra-disciplinary and inter-disciplinary communication, respectively.

Key Words – Conference, conversation, inter-disciplinary communication, analogical thinking.

Introduction

Our purpose in this article is to briefly describe the notion of “conference”, including the different ways in which this term has been used. We will, then, focus on the two main senses in which the term has been mostly used in academic contexts. These two senses originated two different kinds of conferences which we will call the *traditional* and the *conversational (or non-traditional)* ones. Academics, professionals, and practitioners have increasingly been using the

conversational format as an alternative to the conventional conference format. We think that the conversational format might also be used, not just as an alternative, but *concurrently* with conventional conferences in a way as to generate synergic relationships between both formats/models.

We will show that these two kind of conferences, and their respective format, are *opposite* in several dimensions, but the nature of this opposition is not necessarily a *contradictory one*; rather it might be a *polar* one. An important dimension of the referred opposition is that meetings with conversational format are usually and mostly associated with *questions* and /or *problems*, while the usual or conventional conferences are associated with the presentation of papers, with *answers* to questions and/or solutions to problems, based on research activities, reflections and/or experience. The *output* of meetings with a conversational format is oriented to potential solutions or to the formulations of new problems and questions by means of knowledge communication, opinion or reflection sharing, knowledge production and idea creation. The *output* of conventional conferences is usually reduced to knowledge or information communication, mostly in a unidirectional way, via papers presentations. Creative acts usually precede the conference presentation, while creation, group creation (Synectics) is an integral part of the conversational meetings and, potentially, one of its outputs. More of these contrasting and opposing characteristics will be discussed below. We will also suggest a methodology to design and implement this possible integration; and propose possible initial steps that might be taken in the context of a combination of action-research, action-reflection, action-learning, and action-design.

We will suggest that conferences integrating both formats might generate some synergies. We will then shortly provide some reflections regarding the kind of synergies that might be achieved with this sort of integration. These reflections will be based on explicit and implicit *combination of action-reflection, action-learning, and action-design* we were involved in while organizing yearly conferences for about 20 years, especially in the last 10 years. This indicted combination is based on theories, conceptions and methodologies described in several articles and books, e.g. Alvesson and Sköldbberg's "*Reflexive Methodology*", Schön's "*The Reflection Practitioners*", etc.

We will first present a brief description of the notion of conference. Then we will describe the nature of academic scientific conferences along with the usual-traditional model and then non-traditional ones which has been presented as an alternative. We will show that the main sources of these differences are associated to the *ends and means* used in each case. We will suggest that these two models are not necessarily alternatives to each other, but an integration of both of them is feasible, possible, and highly recommendable in several senses. Then we will very briefly describe the methodology we have been following for integration both kind of conferences and because of the space restriction of this article we will refer the reader to the several articles we have written regarding some important details of the used and suggested methodologies. We will show, via two tables, the opposing characteristics of traditional and conversational conferences and the contrasting differences of the respectively associated disciplinary and inter-disciplinary communications.

The notion of conference

As we will see, there are several conceptions of “conference” and several ways in which the term is used. Since the term of “notion” is used to refer to a related set of conceptions and/or different uses of the associated term or phrase (Callaos 2013), then we think that 1) “conference” is a notion rather than a concept, and 2) it should be described (according its denotation and connotation) rather than defined as a concept.

The term “conference” derives from Latin ‘*conferre*’ (from *con-ferre*: carry along with) which meant “compare, confer.” The notion of “conference” included the following senses in English, since the beginning of the last Century: 1) “Comparison; examination of things by comparison.” 2) “The act of conferring or *consulting* together; a meeting for *consultation*, discussion, or instruction, an interview or comparison or interchange of opinion.” 3) “Discourse; talk; *conversation*.” 4) “A lecture.” (The Century Dictionary 1911: 1181; italics added) As it might be noticed the senses in English implicitly include the etymological meaning of “carry along with”. i.e. it requires at least two persons, it is a social event in which “something” is shared, carried along with. *What*, *why*, and *what* is carried along with, what is shared, is what differentiate the different ways in which the term conference is used: press conference, scientific conference, diplomatic conference, academic conference, etc. In this paper we will restrict the notion of conference to the scientific or academic ones. Even with this restriction we still have a high diversity of conceptions and uses of the term conference because it depend on 1) *what* is understood by scientific or academic, 2) *what* scientific or academic activity is being supported by the respective conference, 3) *why* the conference is being held, its objectives, 4) *how* it is being organized, the procedures and sub-procedures being, or to be, used, and 5) the available and chosen *resources* to be used. It is to be noticed that we are using the four Aristotelian causes (teleological, formal, efficient and material causes) which together are the causes of any phenomena according the Aristotelians. A simplified way to conceive the causes of the different uses of the term “conference”, and its different uses, is distinguishing between the *ends*, implicitly or explicitly, established for implementing and/or attending a conference, and the *means* used in its implementation. When the objectives of the organizers and the attendees differ, frustrations and failures are generated. When the *means* used to implement the conference differ from what the attendees, consciously or unconsciously expect, then frustration and even mistrust could be generated.

Scientific and academic conferences

Gordon Pask (1979: 1) appropriately affirmed that “Science is a consensual system which is imaged, in miniature, by a conference.” Since different disciplines have different standards and ways of achieving consensus, as well as its own objectives, based on its epistemological values, then we adequately might suggest (paraphrasing Pask) that a scientific discipline “is a consensual system which is imaged, in miniature, by a conference.” Consequently, since different disciplines might have different ends and/or means then we find many different kinds of different conceptions of scientific and academic conferences co-exist. Sometimes even conferences with similar objectives conceive different means for achieving them. This is why we find a high diversity in conference conceptions and models expressed by means of different papers/abstracts reviewing processes (which is one of the means), even in the context of the

traditional model used by the most prestigious scholarly societies and institutes. Let us give some representative examples found in the context of traditional conferences which mostly are oriented to papers presentations.

The required submissions and their respective reviews encompass a very wide specter going from the extreme of requiring from authors to submit full papers and have strong referees reviews (several ACM and IEEE conferences are examples of this extreme), to the other extreme of accepting submission of abstracts with no more than 50 words and requiring no reviewing process (e.g. American Mathematical society, Southeastern International Conference on Combinatorics, Graph Theory, and Computing, INFORMS, IFORS, etc conferences). Acceptance rates have as well a very wide range going from 14.9% ACM's SIGGRAPH 98, with an average of 50%, to about 100%, which is what is stated explicitly in INFORMS Web sites. Operation Research and the most prestigious and largest conferences of OR/MS (IFORS and INFORMS) explicitly informed (and still informing) in their web sites that “*Contributed abstracts are not reviewed and virtually all abstracts are accepted.*” They have been using this same phrase for at least 14 years. See for example their 2014 meeting at http://meetings2.informs.org/sanfrancisco2014/abstract_contributed_i.html. Fortnow and Gasarch (2007) provide more examples and details regarding these two extremes.

Mediating between these two extremes we find a plethora of different conferences' models and conceptions. Elsewhere (Callaos 2010, 1-2) we provided examples of conferences that mediate between the mentioned extremes. If in the same scientific discipline different conceptions might be found, implicitly or explicitly, associated to diverse ends/means, then how a multi-disciplinary conference should be conceived, designed, and implemented? Inter-disciplinary communication can be originated in multi-disciplinary conferences; consequently, if one of the main objectives of a conference is to foster inter-disciplinary communication, how should it be conceived? What are the sufficiently effective and efficient means to be used? As we will see these are not easy questions to answer. In such cases a cybernetic combination of action-research, action-reflection, action-learning, and action-design is required in the context of a systemic-cybernetic methodology (or meta-methodology) is required to identify transitory solutions which would be modified in the next cycle in order to increase the effectiveness and/or the efficiency of the respective conference organizational process. This approach will be described later in this paper. But, before let us examine a little more the nature of traditional and non-traditional conferences.

In spite the diversity briefly described above, there seems to be some commonalities in most conferences organized by what Pask (1979: 1) called “mainstream”. This kind of conferences has been called by several authors (e.g. Glanville, 2010) as “traditional conferences,” and this is the name we will use in this paper to refer to such conferences, which are described by Glanville (2010) in an un-improvable way because of its high level of content expressed with such a few words. Consequently, we will use his description in this paper. He affirms that:

“Traditionally, conferences are built around the reporting back of findings and developments to a community of interest. The standard unit of such a conference is the paper presentation (in the older idiom, reading the paper). Authors present their (refereed) paper to an interested audience, often in one of several parallel sessions. After presentation, there is a short period for questions. Papers have been accepted in advance through a peer-review process. The program for the conference is determined and timed in advance, and the content of each time slot is determined. *There is little flexibility, almost no improvisation, and the whole event is very limited by tight*

constraints and restrictive control. Some participants attend for little more than the session they present their paper in. *Nowadays, few will receive finance to attend without presenting a paper.*” (Glanville, 2010: 6; italics added)

In traditional conferences *knowledge or information are delivered* in mostly one-way communication channels. This means that conferences are not being used as support for potential *knowledge creation*, i.e. traditional conferences are not adequately supporting or triggering potential creation of knowledge. Conferences are social organizations which might be conceived as a microcosm of scientific activities (or miniature images of Science according Pask). Being this kind of microcosm, traditional conference deliver and share knowledge, but they provide little support (probably none) to other phases of scientific activities, as for example the creative phase of these activities.

The weaknesses of traditional conferences have been addressed by many conferences attendees. Glanville reminded us of the “epitomized remark ‘the real meetings happened in the coffee breaks’,” (Glanville, 2010: 3) and, as already mentioned above, “Some participants attend for little more than the session they present their paper in.” Glanville’s words are the best way to describe the experience I had for about 45 years attending and organizing traditional conferences. Even in the hybrids ones I attended or contributed in their organization, it was very easy to observe (in the traditional conferences or in the traditional part of the hybrid ones) the high recurrence of the facts described by Glanville in few words. It is really unbelievable that almost everyone attending a conference have similar opinions but the number of traditional conferences still increasing especially as related to the number of the non-traditional one. Probably the best explanation of this phenomenon can be found in Pask’s words. Referring to what we are calling traditional conferences he affirms that:

“the entrenchments of norms and foibles proper to what Lakatos calls a “program of scientific research’ a self perpetuating ‘mainstream’. If a conference does that then I really am against it, for in a small scale, it embodies the quintessence of pathologies latent in the scientific community at large” (Pask, 1979: 1, underlyings are Pask’s)

Since, at least, 1979 an increasing number of scholars and researchers have been formally pointing to the weaknesses of traditional conferences. Glanville reports that “The Society for General Systems Research (SGSR; now the International Society for the Systems Sciences) Silver Jubilee Conference held in London (1979) contained an *anti-conference* organised by Stafford Beer and Gordon Pask.” (Glanville, 2010: 3; italics added). The above quotation of Pask formed part of the paper he presented at this anti-conference in which he made a strong and well reasoned criticism with regards to what we are calling here traditional conferences.

We think, and suggest, that if conferences are conceived as microcosm of Science, or scientific activities, then they might support the phase of knowledge creation, especially if we accept that *knowledge is socially constructed*. The presentation of papers and its availability in the proceedings might help in supporting a socially constructed knowledge but this can also be done via traditional journals and other means of basically one-way communications. It is our opinion that conferences, should support something more (or probably different) that what is already being supported by traditional journals, especially for their capability of supporting real time communication from many sources to many receivers which might support, in turn, *synectics*

(group creativity) or *analogical thinking* in individuals placed in the context of inter-disciplinary communication. In other words, conferences are social constructs that might support to a greater extent and probably in a more effective and/or efficient way the *creation* of socially constructed knowledge. Consequently, conferences might support both the initiation and the finalization of a scientific activity.

My personal experience attending non-traditional conferences, conversational ones, helped me a lot more in my analogical thinking for hypothesis formulation and for having more intuitions that triggered intellectually fertile reflections. But the problems I had in participating in such conferences was to find financial support for attending this kind of conferences. Other attendees informed about having similar kind of problems. This is why I emphasized above Glanville's phrase: "*Nowadays, few will receive finance to attend without presenting a paper.*" This is one of the reasons we had in trying to integrate traditional with non-traditional (conversational) conferences. There are more reasons for integrating both kinds of conferences, which will be addressed later in this paper.

Purposes of traditional and non-traditional, conversational, conferences

According to what we briefly described above, there would be, in our opinion, mainly three different, implicit or explicit, conferences' *purposes*, or *ends*, which originate different conceptions of scientific or academic conferences; which differentiate, in turn, the *means* to be selected for their respective implementations. These three purposes are: 1) to support the *last* part of processes of knowledge creation, i.e. its communication to others, 2) to support the *initial* part of processes of knowledge creation, and 3) to try to achieve a tradeoff between supporting the initial and the last parts of knowledge creation processes. The first kind of purposes is usually achieved with traditional conferences, in which results are reported by means of papers presentations. The second kind of purposes is usually achieved by non-traditional, conversational conferences. And the third kind of purposes can be achieved by finding effective way of integrating traditional with non-traditional conferences, i.e. conferences with sessions oriented to reporting *results* or paper presentations and conversational sessions in which *questions* are made or tried to be answered by means of intellectual conversations or dialogs. The latter seems to be very effective in the case of *inter-disciplinary* communications.

As we informed above, according to Glanville report (Glanville, 2010: 3) Stafford Beer and Gordon Pask organized an *anti-conference* in the context of the SGSR/ISSS Silver Jubilee Conference. This anti-conference was implicitly based on different explicit purposes than those sought, implicitly or explicitly, by traditional conferences. Changing the purpose, or the ends, of the conference required substantial changes in the means implemented. This changing of ends and means modified the conception and the design on the meeting to its opposite, hence the name "anti-conference" that was used. Below we will show why with think that the opposition between traditional and conversational non-traditional conferences is mostly a *polar opposition not a contradictory one*.

The anti-conference organized by Stafford Beer and Gordon Pask generated many reflections in high quality scholars, especially in the area of the System approach (or systemic) and cybernetics. One of the leading scholars and high quality researchers who organized and helped

the organizations of non-traditional conferences was Bela H. Banathy, who rightly thought that a principal purpose of conference is to support a learning process, not just passively getting knowledge and information which is the implicit or explicit purpose of traditional conferences.

In 1981 Bela H. Banathy, the founder of the systems program at Saybrook, started his bi-annual Fuschl Conversations (because they were held at the Fuschl, Austria) The latest conference was held on April, 2014 in Linz, Austria . These conversational conferences have been supported by the International Federation of Systems Research (IFSR) and convened right after the bi-annual European Meeting on Cybernetics and Systems Research conferences, which were held a Vienna, and were more oriented toward the traditional kind of conferences. Bela H. Banathy also started the annual Asilomar Conversations supported by the International Systems Institute, based in the US at Asilomar, in Pacific Grove, CA. These conversational conferences generated the Asilomar Conversation Community whose members maintain face-to-face and virtual communications, via asynchronous means. About 50 conversational conferences held in about 10 countries were organized under the leadership of Bela H. Banathy. His leadership and inspirational character is a fundamental keystone in what has been called the “conversation movement”. Among other leadership roles, he was the founding president of the International Systems Institute, former president of the International Federation of Systems Research (IFSR) and the International Society for Systems Sciences (ISSS), promoter of the Asilomar Conversation Community (ACC), and Honorary President of the first World Multi-Conference on Systemics, Cybernetics, and Informatics (WMSCI). His leadership and kind mentoring were fundamental in the conception of the possibility of integrating traditional and conversational conferences at the same venue, which is the central point of this paper.

The Fuschl Conversations have been organized every two years, for 25 years by the International Federation of Systems Research (IFSR); and The International Systems Institute (ISI) has organized 25 meetings with the conversation format since the early 80’s, being the Asilomar Conversations the core of them. Bela H. Banathy, former President of the IFSR and the ISSS (International Society for Systems Research) and the founder of these two series of meetings with the conversational format, was the first Honorary President of The WMSCI Conferences. The experience gathered in these conversations will support the organizing process of conversational meetings in the context of The WMSCI Conferences, as well as other conferences organized by the International Institute of Informatics and Systemics (IIS). Organizing conversational meetings, in the context of conventional conferences, might support the generation of ideas related to the integration of both models. Possible synergies might be generated by means of combining both models and the ways of implementing them with the purpose of increasing the effectiveness of conventional conferences. Indeed, the conversational format was conceived as an alternative to the conventional one in order to improve the effectiveness of scholar, academic, professional, and /or practitioner meetings.

Thanks to Banathy’s leadership, inspirational mentoring and innovative spirit many who attended the conferences he organized learned about the importance of conversational conference especially for its effectiveness in supporting learning processes, inter-disciplinary communication, analogical thinking, and creative processes. For example, T. G. Frantz (2006), one of those who attended frequently his conversational conferences, affirms that The International Systems Institute (ISI), organizer of the Asilomar Conversations,

“was born out of the recognition that academic, scientific and professional conferences seem to offer scant opportunities for colleagues to *confer*, to *converse*. Typically, a minority of participants deliver prepared presentations to a relatively passive majority. Except for brief Q & A opportunities, interchange among participants is rarely found on the official schedule... Presenting is almost always more prestigious than listening, and some presentations carry greater prestige than others. Traditionally, the prestigious experts disseminate pre-packaged new ideas to the others, who are encouraged to take home and use whatever they find valid or promising.

Such *hierarchical knowledge distribution systems* greatly constrain us in addressing humanity’s most pressing and complex issues, issues about which we are not merely concerned, but also outraged. Of course, at traditional conferences it is understood that scholars should approach issues objectively - without emotional involvement. Bela H. Banathy had a different vision for scholarly gatherings, one which could more fully harness the collective potential of groups...As Banathy puts it, ‘We aspire to reap the ‘reflecting and creating power’ of groups that emerges in the course of disciplined and focused conversations on issues that are important to us and to our society’.” Frantz (2006; italics added)

Matthew Shapiro (2004), who also attended frequently the Banathy’s conversational conferences, supported the organization of the Follet conferences as conversational ones. In the Call for Papers of the 2004 Follet conference wrote that her approach was

“modeled after the experience of the Asilomar and Fuschl Conversations on Social Systems Design - is a desirable alternative to the conventional conference format because it supports *integrated diversity, produces much more mutual learning and new knowledge, and builds long-lasting networks*. It also represents a recognition that the most interesting part of typical conferences has been the conversations that occur in doorways, in hallways, and over coffee and meals between presentations.” (Parker, 2004; italics added)

We will see below, the potential for “integrating diversity” of the conversational model is what we have been attempting to achieve in trying to integrate the *disciplinary diversity* of multi-disciplinary conferences in order to “produces much more mutual learning and new knowledge, and builds long-lasting networks.”

Though implicit, it is evident that the purposes (and even the epistemological values) of the traditional and the conversational conferences are different. Traditional conferences use the term “confer” in its sense of “deliver” information or knowledge, i.e. in the same sense that “confer” is also used to mean “bestow,” to “grant.” This is why Frantz says that the traditional conference is a “hierarchical knowledge distribution systems” based on the General Chair, the Program Committee, the reviewers, the acceptance/refusal decisions, the decision regarding the a non-strict conference program with time slots for each presentation, and even in each presentation the presenter is supposed to know more about what he/she is talking about than the audience, with some exceptions in which someone in the audience notice an error, fault, or mistake in the presentation. On the other side conversational conferences, meetings, or sessions, are non-hierarchical, horizontal, because they are based in the other sense of the term “confer” which means “exchange opinions”, “dialogue”, “converse”. As we wrote above, the term “confer” derive from Latin “*con-ferre*” i.e. “carry along *with*”, carrying along a *verse* with, *con-verse*. This kind of horizontal communications and con-versations is what support “diversity integration,” co-learning processes, and (potentially) analogical thinking.

Banathy conceived different kind of conferences (even opposite in several dimensions) to the traditional ones because his *purposes* were clear to him, which he derived from one of the basic drives he had for the organization of the Fuschl and the Asilomar conversations. His drive was the organization of Social Systems and a conference is a social systems. Consequently, he tried his accumulated knowledge and experience in the field of the “design of social systems” to the design of conferences. The organizing of a traditional conference has an *implicit* design of a social system. Banathy wanted to make this design *explicit* by means of making explicit the purpose of the social system to be organized and finding the most adequate mean for it. Since Banathy conceived that a conference should support learning processes in adults, and he knew that a lecture is easily forgotten when it is *passively* listened to, but an *active* listening would be more effective and better remembered. Since a real conversation or dialog imply an active thinking while talking and listening; then he rightly thought that conversations would be more effective means to support learning processes, especially in adults. On the other hand, active conversations and dialogs which are associated with trying to answer a question, or generate some important questions, or conceive some design have a high potential for group creativity (Synectics) and analogical thinking, which usually precede, implicitly or explicitly, logical thinking in scientific activities.

Since a main purpose for the organization multi-disciplinary conferences by the International Institute of Informatics and Systemics is to support the analogical thinking usually generated in inter-disciplinary communication, it was evident that a hybrid model of conferences was need, i.e. a model in which disciplinary presentation would be made according to the traditional model and inter-disciplinary conversations are included in the program in order to allow scholars and researchers from different disciplines to engage in an inter-disciplinary communication about problems that are common to most (if not all) disciplines and, consequently, to generate or create explicit non-disciplinary knowledge and implicit analogical thinking in those who are participating in the conversational inter-disciplinary communication sessions. Another basic reason has been to provide the participants of conventional technical sessions with the possibility of having conversational meetings on the technical topic that supported the conventional presentations of their papers.

Initially, we did not achieve an adequate level of effectiveness in the integration of both traditional and conversational conferences. But, slowly we noticed how the effectiveness level was increasing, according the opinions of the participants.

Conceptual bases supporting conversational conferences: A short description

B. H. Banathy affirmed “It is the basic right of individuals, groups and communities to be involved in making decisions that affect them.” Consequently, conference participants should be involved in the decisions that affect them with regards to the effectiveness of the conferences as related to the achievement of the objectives they might have while participating in the conferences as. Example of the objectives that conference participants might have, are: knowledge communication, learning, networking, presenting hypothesis, solutions, work in progress, etc. A participatory process should complement the hierarchical one used in conventional conferences for knowledge communication and other conference objectives.

It is our experience-based opinion, that bottom-up and top-down methodologies might be synergistically combined in the design of some social systems, as it is the case of information systems' development teams. Similar possibilities might exist for conferences' design organizations. Indeed, they actually are social and information systems for knowledge communications and learning processes. Among the methodological roots we are proposing is B. H. Banathy's (1996; 1999) description of social systems design as "future creating disciplined inquiry" (Banathy, 1996: 45). Interpreting Banathy methodological conception, Kathia Castro Laszlo affirms that social systems design

"is a purposeful and creative process through which a human activity system can transcend its actual situation by translating an ideal image of the future into reality - it is concerned with that which ought to be. As an interactive and participatory process, SSD [Social Systems Design] is based on the premise that we cannot design *for* others: we can only design *with* others. Were we to do otherwise, we would not be engaged in authentic design but rather in the imposition of our visions, values, and proclivities. Systems design involves the use of scientific and intuitive knowledge, rationality and creativity, theory and practice, thinking and conversation, analysis and synthesis, participation and collaboration, evaluation and experimentation. Rather than relying on deduction *or* induction, as traditional sciences and the humanities do, systems design uses deduction, induction, *and* abduction - the latter involving the creative generation of new knowledge from what is already known." (Castro Laszlo, 2001: 6).

By means of analogical paraphrasing, we might affirm that, for those conference participants who know about the weaknesses of conventional conferences and their low levels of effectiveness, they might have the purpose of designing and organizing a *future creating disciplined inquiry*, so future conferences might increasingly be more effective than the actual conventional ones. The design and the organization of a conference, as a social and information system for knowledge communication, networking, and learning, should be a *purposeful and creative process through which a human activity system can transcend its actual situation by translating an ideal image of the future into reality*, in such a way as to increase its effectiveness with regards to the objectives that its participants might have. An interactive and participatory process for conference design and organization should be based on the premise that *we should minimize the design for others: and maximize the design with others*. Were we to do otherwise, we would not be engaged in authentic design but rather in the imposition of our academic visions, epistemological values, and disciplinary proclivities. Conferences design and organization should involve *the use of both scientific and intuitive knowledge, rationality and creativity, theory and practice, thinking and conversation, analysis and synthesis, participation and collaboration, evaluation and experimentation*. This why we recommend and have been following, since 2006, a methodology for conference design and organization based on a combination of action-research, action-reflection, action-learning and action-design, which process began with conversational sessions in which conference participants held conversational sessions regarding the objectives of an academic conference.

Opposition between Conventional Conferences and Conversational Meetings

Though the conversations held with regards to what should be the objectives of a conference and the hybrid methodology briefly described above, we learned that the conversational and the conventional conferences formats oppose each other in several aspects. Table A below summarizes some of them. It might be thought that because of these opposite aspects of both

models, the respective meetings have been held separated from each other. But, in our opinion, this opposition does not necessarily mean a *contradiction*; it might be handled as a *polar opposition* from a synergic perspective, or a complementary one, where each opposite requires the other to generate a *synergic relationship* or to produce positive *emergent properties*, where the whole is more than the sum of its parts.

	Conventional Conferences	Conversations Format
Input	Paper based on a <i>solution</i> or an <i>answer</i> , which will be presented by an <i>individual</i> (its author).	A <i>problem</i> or a <i>question</i> , which will be addressed by a <i>group</i> .
Output	<i>Knowledge</i> or <i>information</i> communication.	Sharing of <i>knowledge, reflections, ideas and opinions</i> in multi-dimensional communication.
Flow of Information	Basically <i>unidirectional</i>	<i>Multi-directional</i>
Sequence	<i>Serial</i> : one presentation after the other, in a <i>linear</i> format.	<i>Serial/Parallel</i> : multiple short presentations by each individual interacting with similar short presentations of others in a <i>non-linear</i> interchange of ideas.
Cybernetic Loops	Very <i>low level</i> of mostly <i>negative feedback</i> in the small time period of questions/answers.	<i>High levels of negative and potentially positive feedback and feedforward</i> loops in a highly interactive environment.
Formal/Informal	Papers are presented in a <i>formal</i> environment and informal interaction is limited to coffee breaks.	More <i>informal</i> sharing of ideas and reflections with more possibilities of group creativity and emergence of ideas
Creativity	<i>Individual</i> (or group) creativity <i>previous</i> to the meeting.	<i>Group</i> creativity <i>during</i> the meeting, nurturing and being nurtured by the individuals in the group in positive loops of feedback.
Order	<i>Pre-established fixed</i> order of papers presentations. <i>Plan-based</i> order.	<i>Post-established, emergent and dynamic</i> order. <i>Rules-based</i> order.
Process	Systematic	Systemic
Implicit General Objective	Oriented to <i>efficient</i> knowledge or information communication.	Oriented to <i>effectiveness</i> in knowledge communication, sharing of ideas, learning, and reflections, solving problems, answering questions, achieving consensual designs, etc.
Whole/Parts	The whole is basically <i>equal</i> to (or sometimes even less than) the sum of its parts	The whole is basically <i>more</i> than the sum of its parts.
Guiding Metaphor	<i>Mechanism</i>	<i>Organism</i>
Methodological and Epistemic Approach	Mostly, but not uniquely, oriented by <i>Reductionism</i> and <i>Mechanicism</i> .	<i>Oriented by the Systems Approach and its Pragmatic-Teleological epistemology and methodologies.</i>

Table A

On the other hand, the opposite features of both conference models do not make any of them better than the other in an absolute form. Each model has its own advantages and disadvantages, and depending on the objective of the organizers one of them might be more adequate than the other. If an appropriate combination of both of them is made, we might amplify the advantages of each model and diminish its disadvantages. To identify some kind of an adequate combination, some tradeoffs should be made. These tradeoffs are, by its very nature, more subjective than objective, so they require subjects (individuals) to make them with the objective of finding the most consensual one, in order to *maximize the effectiveness* as related to the objectives of the attendees, and subject to the always existent restrictions of real life (e.g. financial resources, promotional policies in most academic departments, research grants conditions, etc.) In our case, these subjects are the scholars, academics, researchers, practitioners, consultants, and professionals who are the participants of our conferences and the restrictions are theirs and ours.

We think that to generate a good level of consensus (hence conference effectiveness) with regards to this kind of tradeoff between the two models, a meeting (or meetings) with a conversational format might be a good starting point. Consequently, our purpose was to begin with the very small step of organizing this kind of conversational meetings in the context of The WMSCI 2006. Some of the conversational sessions in this year were oriented to answer questions like: What conferences are for? What are and /or should be the objective of an academic conference? What are you expecting to get from this conference? What would you like to get additionally?

In the following years we held conversational sessions, before and during the traditional one, oriented by problems and questions related to many, if not all, academic disciplines. Examples of the topics associated to these conversational sessions are the following: Academic globalization; peer-reviewing: weaknesses and potential solutions to some of them; academic ethos, pathos and logos, ways for achieving interdisciplinary communication, how to use a multi-disciplinary conference as a platform for effective inter-disciplinary communication, possible solutions to the weaknesses of the required peer reviewing, objectives of an academic conference, integrating knowledge, integrating research and practice, integrating academy and industry, etc. Some attendees to these conversational sessions were allowed to write invited reflection papers related to the author own reflections on the subject and complemented by the reflections and opinions that were shared in the respective conversational session. These invited reflection papers were included in the post-conference volume of the proceedings and some of them were selected for their publication in the Journal of Systemics, Cybernetics, and Informatics (JSCI). All attendees to the traditional conference could attend the conversational sessions with no additional costs and any publication that emerged from attending these conversational sessions added no extra-cost for the author neither in the post-conference volume of the proceedings nor in the journal if the invited paper was selected for this kind of publication.

A Systemic (not systematic) methodology was being applied

The methodology we have been using for the achievement of our purpose is a Systemic (not systematic) one. Systems Analysis and Synthesis are oriented basically (but not uniquely) to Social Systems Design as well as to Information Systems Development, and Collective Decision Support Systems. For about 40 years we have been continuously designing, using, and re-

designing this kind of methodology on a cybernetic process, using (negative and positive) feedback and feedforward loops for its continuous improvement, generalizations, and applications to different kind of systems. This methodology has been successfully applied, for about 30 years, to more than 120 design and implementation processes of different classes of systems, and it has been explained in details in other publications (see, for example, (Callaos 1992, 1995a, 1995b, Callaos and Callaos 1992, 1994, 1995a, 1995b, 1995c, 1995d, 2014).

As we said above, the systemic methodology (or meta-methodology) we have been applying is based on 1) a combination of action-research/enquiry/reflection, action-learning, action-design, in the context of 2) Incremental planning and 3) evolutionary approach. Cybernetic loops are most of the time included in the design-implementation of each planning increment and between planning increments. In the case of conferences design and implementations these planning increments were annual at the beginning and twice a year later.

We can resume the theoretical-methodological mixed platform we have been using in the following term:

- A. The System Approach, in general, and specifically, the Singer-Churchman epistemology regarding the Pragmatic-Teleological systemic perspective of the truth (Churchman, 1971), i.e. truth in related to the effectiveness of praxis or action.
- B. A constructionist perspective in which a social systems or a software-based information systems are physically constructed by means of a social construction of knowledge based on the requirements the users, super-users, and supra-users with regards to the system to be developed or constructed; which, in turn, will support more social construction of knowledge and shared information via multi-dimensional communication channels.
- C. The Incremental Approach to Planning and decision making. (e.g. Braybrooke and Lindblom 1970, Lindblom 1959, 1990) Incremental planning is an intelligent trial-and-error (Woodhouse and Collingridge 1993), which is required when a high degree of uncertainty and complexity is present in problem solving as it is the case of Social Design, in general, and especially in the case in which it is made with the objective of Social Knowledge Construction, as it is in the special cases of information systems design and, in particular, of academic conferences design and implementation. *Rational top-down design* which might have been effective in some situations related to hard engineering designs, electronic data processing, software engineering, etc. proved to be less effective (or completely ineffective) in social design and human problem solving. This is mainly because 1) social design and social systems implementation include human problem solving are very complex and usually immersed into environment with high uncertainty, while our analytical capacities quite restricted (Lindblom 1959, Simon, 1955) and mental functioning is relatively very limited (e.g. George Miller's magic number 7, plus or minus 2; Miller 1956). Furthermore, in social systems we do not have and adequate level of certainty regarding cause-effect relationships and it does not seem to be any time or resources feasibility to have this kind of knowledge. People frequently confuse ends with means, are not sure about all the objectives and requirements they have in a given social systems and when they do know their individual objectives, they do not agree with each other and are not sure about the kind of tradeoffs they are ready to accept in the case of conflicting objectives. We briefly mentioned above the present and

increasingly explicit disagreement found with regards to the objectives that an academic conference (a microcosm of the scientific community or Science as a social construct) have or should have, and when they agree on the objective and the kind of conference to be organized then there is no agreement about the means that should be used. A clear example about the means are the diversity of conceptions regarding peer-review methods and even on what “peer” means or should mean. This is the kind of reasons why incrementalism was conceived and used, as well as why Incremental planning is a main intellectual support of the General Methodology (or meta-methodology) we applied to about 120 effectively finished projects on information systems (specific cases of social systems) in both software-based and non-software based information system, and this is why we are continuously applying the same methodology for academic conferences collective conception design, and implementation

- D. Cybernetic bottom-up intelligent trial-and-error proved to be much more effective or, at least, less ineffective than other kind of design/implementation methods. Cybernetic principles and specially the application *regulative* feedback has been applied inside each increment implementation, and adaptive feedback and feed forward has been applied between increments, i.e. in the design of the next increment, always in the larger meta-methodological context of action-learning, action-research/enquiry/reflection, and action-design.
- E. Biological and ontological evolutionary concepts, in the context of an *analogical thinking*, has been applied to C and D as to conceive an evolutionary-incremental methodology (see, for example, Callaos 1995b). This methodology has been applied and taught for about 30 years in several Venezuelan universities and many corporative seminars. This evolutionary-incremental methodology (which has been successfully applied to more than 120 projects in information systems development and deployment) is a special case of the General Systemic Methodology for Systems Analysis and Design mentioned above (see, for example, Callaos and Callaos, 1992; 1994; 1995a, 1995b, 1995c)
- F. Designing social systems frequently (if not always) requires social or collective decision making. In such cases we frequently used (at least in the design) the Delphi Method applied on *ordinal scales* (or *individual preferences*) and the Mathematical Solution we found for The Voter (or Condorcet) Paradox¹ (Callaos 1976a, 1976b, Callaos, et. al 1981). Examples in which we applied this combination of Ordinal Delphi² and our

¹ Marquis de Condorcet, in the late 18th century, discovered this voting paradox: individual transitive preferences (votes) might produce intransitive collective preferences if these are generated by means of the Absolute Majority Rule. If we equate transitivity to rationality (as it is done political science, economics, etc.) the individual rationalities might produce individual irrationalities. Several mathematicians (Borda, Laplace, etc.) tried to solve this paradox, until Nobel Prize Kenneth Arrow mathematically demonstrated that there is no solution of this paradox by means of his famous Impossibility Theorem. We showed a mathematical solution to this paradox and described the inconsistencies in the five axioms used by Arrow in his book written regarding this issue (Callaos, 1976b)

² As it is known, in a decision making process, individual preferences can be represented via ordering the respective alternatives, i.e. using *ordinal* scales, or by weighing them with a real number, i.e. using *cardinal* scales. Cardinal scales may present inter-subjective differences while ordinal scales do not have this kind of problem. Consequently, Ordinal scales are more objective than the cardinal one. On the other hand, Delphi is usually based on cardinal

Mathematical Solution to the Voter Paradox can be found in Callaos 1980a, 1980b, 1981, 1992, 1995a, as well as in Callaos, Callaos and Lesso, 1981, 1999, and Callaos, et. al. 2001. In the examples we just cited Collective Decision Support Systems were used to generate the social construction of the knowledge or information required for producing the collective decision required as input of the Social Design and its consequent implementation. But, in many cases of software-based information systems we used the General Methodology we are referring to with no need of using Ordinal Delphi based on our solution to the voter Paradox. In the generation and implementation of several conferences conceptions we did not use what we are referring to as Ordinal Delphi, but we strongly suggest to use it if the required resources are available. Actually we will propose in this paper to use the Ordinal Delphi based on the Mathematical solution to the Voter Paradox as one of the improvements to be achieved in the future.

Inter-Disciplinary Conversations

In the specific case of the conferences being organized by the International Institute of Informatics (IIS) and according to a main purpose of the IIS, these conferences are multi-disciplinary ones in which one of their main objectives is to serve a platform for *inter-disciplinary communication*. Consequently, the conversational part of these conferences has been mainly oriented to this objective. This is why we would like to address the notion of conversation in the context of inter-disciplinary communication.

Elsewhere (Callaos and Horne, 2013) we tried to examine and describe the notion of “Interdisciplinary communication.” Here we will try to briefly describe the notion of “conversation” as a means for interdisciplinary communication.

Conversational communication has been conceptually related to Cybernetics (and consequently to the Systems Approach). Pask’s work on the subject and has been applied to Education since then. Because Interdisciplinary Communication is strongly related to analogical learning, Pask’s Conversation Theory might provide the intellectual support to analyze the adequate means of identifying and designing interdisciplinary communications processes, as well as pragmatic means for their implementations in specific cases. This article is not the place (nor do we have the space) for a more detailed description of Pask’s Theory of conversations, but let us briefly refer to the most related aspect of this theory to the purpose of this article.

Bernard Scott (1982) affirms that according to Pask’s perspective “Conversation Theory is nothing less than a reappraisal of all extant philosophies of science and an attempt to rewrite them within the context of a formal theory of consciousness.” Since Pask’s purpose had a trans-disciplinary orientation, his theory should have a high probability of being effective in many intellectual endeavours and consequently in many disciplines, which make it a good candidate for supporting interdisciplinary communication. Scott (1982) also affirms that “The concept of

scales, we preferred to work with what we called “Ordinal Delphi” which is the same Delphi method but using the ordinal scales. Instead of the averages used in the traditional Delphi processes as representation of the collective preference, we used our Mathematical Solution to the Voter Paradox in order to represent the collective decision to inform the individuals before the next round of collecting individual preferences and combining them into a collective one.

an isolated psyche that “knows” is meaningless. There is always a thou with the I,” as it was noted by many authors including Pask for whom according to Scott’s “Consciousness is the knowing, with each other, by two or more participants of a relation.” As a consequence of “Knowing ... *with each other*... all cognition is conversational in form;” (Scott 1982)” and, “grew up...for dealing with inter- and intra-personal interaction.” (Pask 1980) Consequently, we might suggest that *conversations support intra- and inter-disciplinarians communication, among other cognition processes*. As we said above, traditional papers publishing in journals or traditional papers presentations in conferences are oriented to present results, to inform with regard to knowledge that has already been generated or constructed. In this one-way traditional publications and presentations, the purpose is to *transmit* knowledge previously obtained, not to create it, or to create analogies that might create new knowledge. But if we are to generate cross-disciplinary analogical *learning* and thinking, if we are to generate new knowledge or analogies, then approaches as Pask’s are adequate

Analogies and analogical thinking are produced by means of a learning process in which knowledge from a discipline is represented in the context of other disciplines. Intellectual forms imported from other disciplinary frameworks or languages, and represented by means of different disciplinary languages, frameworks, and conceptual contexts, may produce new knowledge, analogies, and analogical thinking that may conduce to new intellectual perspectives, the production of new hypotheses or conjectures, which after being validated via logical thinking or experimentation may produce new scientific theories or new solutions, or new Engineering designs or technologies.

The possibility of generating analogical thinking via inter-disciplinary communication is one of the many benefits that might be produced by achieving an effective integration of traditional and conversational conferences. Traditional multi-disciplinary conferences provide the disciplinary scholars who besides presenting their disciplinary papers at traditional sessions might attend inter-disciplinary conversational sessions in order to enter in dialogue (not disciplinary discussions) with scholars from other disciplines regarding the possible solutions of problems or answers to questions of common interest. These problems or solutions are usually a) trans-disciplinary ones, b) of non-disciplinary nature, or c) require multidisciplinary perspectives to be dealt with.

Natural language proficiency is an important issue when it comes to interdisciplinary communication. Communication via analogies, images, and metaphors are significant in this kind of communication. Likewise, it is with the dialogical approach how researchers and scholars from different disciplines *interact* with each other dynamically and dialogically, not monologously, in order to *learn* from each other in a fruitful cross-disciplinary interplay and collaboration. In usual scientific conferences, scholars and researcher attend basically to *inform* about their research results, and to be informed about other researchers’ results. In interdisciplinary symposia, workshops, roundtables, etc. researchers, scholars, and practitioners attend to *participate in a cross-disciplinary co-learning* process. *Multidisciplinary conferences might be held in parallel, or collocated, with interdisciplinary events in order to support each other*. Researchers and scholars might be more productive and more useful to themselves and to other participants in such parallel events, where they might inform, and learn; get informed and teach. In this framework, *interdisciplinary tutorials* might play a very important role. They might

not only support interdisciplinary communication, but they might also foster the communication between universities and industries, between the academic and the corporative worlds, between scientists, technologists, and practitioners, and even between scientists and the general public. Interdisciplinary communication, via interdisciplinary tutorials or other means, has a high potential in supporting the creativity required for the generation of new ideas, hypothesis, innovations, and/or unfamiliar possibilities by means of interdisciplinary analogies.

Similarly to the contrasting characteristics we found between traditional and non-traditional conferences (table A above), we concluded elsewhere (Callaos and Horne, 2013) that contrasting characteristics can also be identified between disciplinary and inter-disciplinary communications as it is shown in table B (Callaos and Horne, 2013)

Guidelines for the Conversational Format

Richard Saul Wurman affirmed that “You begin all the conversations with questions.” (References by Bronwyn, 2006, p26) “Other authors think that the conversational format might begin with “a panel, a video presentation, or a reading”. Other guidelines might be inferred from table A, which provide a contrast between conversational and traditional conferences. Elsewhere (Callaos, 2010) we provided some known guidelines for the moderator, ground rules, to wrap up the conversation, post-conference publishing, etc.

Some Conclusions

We can briefly make the following conclusions:

1. The meta-methodology, we briefly described, is showing an increasing effectiveness regarding our main purpose which is, as we stated above, “*to achieve inter-disciplinary communication, via conversational sessions, among disciplinary researchers who present their disciplinary papers in the conventional conference.*” This effectiveness is also perceived by the participants in the conference, especially in those who participated in several opportunities. Initial testimonials were posted at <http://www.iiis.org/testimonials.asp>.
2. An increasing number of papers are being published as result of the conversational sessions. These paper would not have been generated because the academic promotional systems and scientific grants generally require the presentation of disciplinary papers in journals or in proceedings, as **input** to the respective conference (or journal), not as **output** of a conversational session which generate papers reflecting what has been learned and/or inspired and/or generated by analogical thinking during the respective informal conversation.
3. Very important topics, that usually have no financial support from grants or from the traditional disciplinary academic department and are not considered valuable in the traditional academic promotional systems, are usually the topics in the conversational sessions we organize along the traditional one. Consequently, reflections and papers in important topics are generated as output of the conversational sessions which otherwise might have never been produced.

Inter-Disciplinary Communication	Intra-Disciplinary Communication
Oriented to analogical thinking and learning	Supported by logical thinking and informing
Based mainly on Synthetic or integrative (probably via syncretic and/or eclectic) thinking	Based mainly on analytical thinking
Dionysians traits: leaning to intuition, synthesis and passion; and/or Odysseans traits : combining the two predilections in their quest for connections among ideas.	Apollonians traits: favoring logic, the analytical approach, and a dispassionate weighing of evidence
Systemic Insertion of research results	Systematic presentation of research results
Strategic intentional ambiguity is required for effective communication with multi-disciplinary audience.	Precision is valued
Tradeoff between rigor and adaptability to different disciplines, or multiple rigor versions according to the sought audience plurality	Maximization of rigor according to each disciplinary epistemological values and consensually accepted methodologies.
New relationships based of not necessarily original ideas are valued.	Original ideas are valued
Dialogical and/or Mono-Dialogical Orientation	Monological and/or multi-monological orientation generating potential debates.
Conversations and dialogues	Discussions, argumentations, and potential debates.
<i>Homo dialogus</i> : intellects relating to themselves by means of interacting with other intellects via dialogics.	<i>Homo argumentus</i> : intellect relating to others to win an argument by means of relating to themselves via logical thinking.
Reveals assumptions and premises for reevaluation.	Defends or attacks assumptions or premises
<i>Require temporarily suspending one's beliefs and assumptions.</i>	Require conviction in one's beliefs and assumptions.
Since enthymemes (syllogism in which one of the premises is not stated) are frequently used in conversations or dialogues, communication processes should include the identification of implicit or tacit disciplinary premises.	The identification of implicit or tacit disciplinary premises is not always a necessary condition for and effective communication
Frequently causes introspection on one's own position.	Frequently causes critique to other's position
Dialectic as creative tension based on differences identification and opposite perspectives	Dialectic as argumentation, with which opposite opinions are confronted as a way of showing which one represent the truth, or which one is false; or as the sense of art or science of proving through logical argument.
Participants search for basic agreements and difference identification is used as potential learning sources in order create knowledge or extend the intellectual common ground.	Perceived differences are conceived as contradictions which should be faced by means of showing the truth or the falsehood of the contradicting thesis or ideas.
Multiple disciplinary dialects might lower communication effectiveness	Efficient communications through disciplinary dialects
Identification of synergic polar oppositions	Identification of contradictions.
Shared meaning and understanding	Truth/false identification and transference
Communicants submit their best thinking, knowing that other people's reflections might support their respective improvement.	Communicants submit their best thinking and defend it against challenges to show that it is right.
Non-hierarchical networked knowledge	Hierarchical relationships among disciplines
Non-lineal collective thought processes and explicit cybernetic loops	Lineal thought processes with few implicit cybernetic loops.
Communication is for knowing with each other and for knowledge creation.	Communication is usually one-way traditional publications and presentations, where the purpose is to <i>transmit</i> knowledge previously obtained, not to create it.
Collaborative	Frequently based on individual (or small groups) thoughts to be transmitted or to oppose other thought.
Finding common ground is usually the purpose.	Proving truth (or falsehood) in the context of a discipline is the usual purpose, which frequently is achieved via winning an argument.
Listening the other side in order to understand, learn, find new meanings, agreements, and common ground to improve communication.	Listening is usually for information apprehension and/or to identify flaws in order to counter-argument.
Extend and possibly changes a participant's point of view. Debate affirms a participant's own point of view.	Points of views are contrasted and discussed in order to confirm or disconfirm them
Participants assume that many people have different valid perspectives of reality and that together they can put them into a whole which would be a more adequate representation of reality.	Participants usually assume that there is one right perspective and that someone has it.

Table B

4. Fostering analogical thinking via inter-disciplinary communication has also been an objective of our conferences. Up to the present we have just informal communication regarding the analogical thinking that is perceived in the conversational sessions. We are planning for the future to identify a more adequate way of assessing the effectiveness of our methodology (instantiations of our meta-methodology) with regards to this other objective. We probably might start collecting information in the next conference with regards to this issue.

5. We noticed the generation of the cybernetic loops we referred to above, but we need to implement additional integrative processes in order to increase the effectiveness of loops. What we observed up to the present and what we should be focusing in the next methodological increments, or projects in action-research/reflection, action-learning, and/or action-design, is schematically visualized in figures 1, which might be expanded in a more detailed one, but we estimate that this probably is not adequate in the context of this article, and according to its main purpose. Notice that Figure 1 relates the two columns of table A as well as those of table B (above) with the objective of integrating them as *polar opposites* in systemic whole which might have emergent properties. Figure 1 also relates the traditional/conversational conferences with intra- and inter-disciplinary communications. This means that the double integration we are proposing between the two columns of table A as well as those of table B is, in turn, being related with each other in the context of multi-disciplinary conferences.

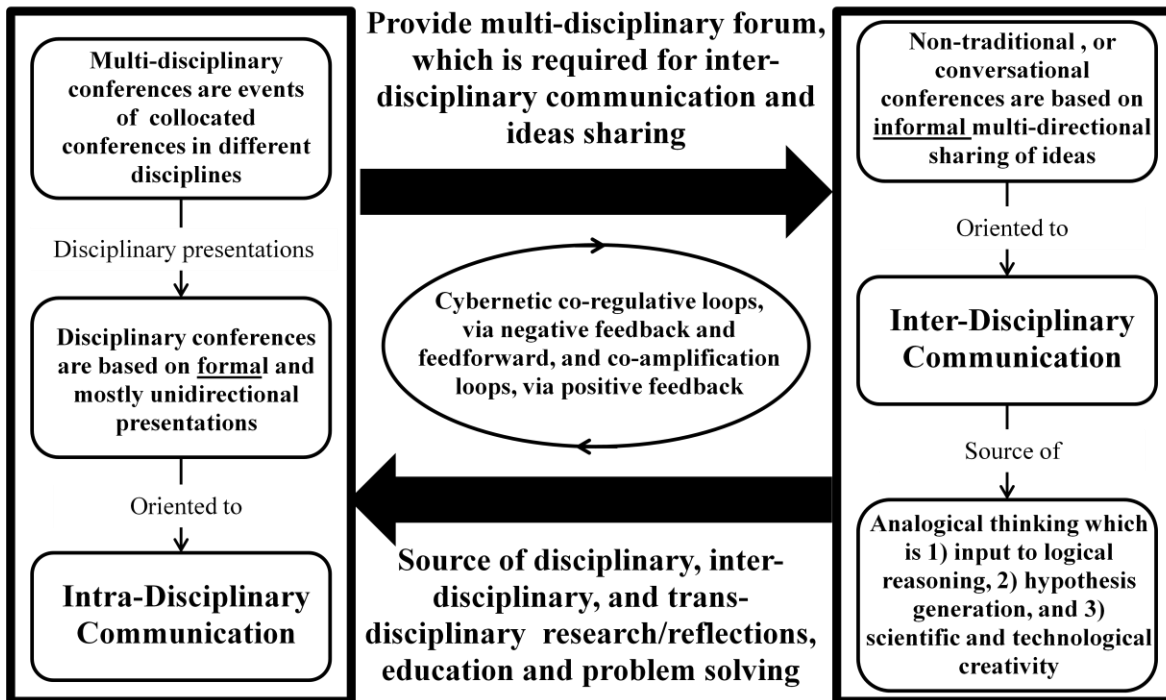


Figure 1

References

- Alvesson, M. and Sköldbberg, K. (2000) *Reflexive Methodology: New Vistas for Qualitative Research*. SAGE Publications, London.
- Banathy, B. H. (1996) *Designing Social Systems in a Changing World*, New York: Plenum.
- Banathy, B. H. (2000) *Guided Evolution of Society: A Systems View (Contemporary Systems Thinking)*; Springer.
- Banathy, B. H. "Propositions that Underlie Social Systems Design" posted at http://www.isiconversations.org/publications/pub_underlyin_propositionspdf.pdf (Accessed on December 23, 2014). And as appendix 1 in Stalinsk, S. Leadership Coaching as Design Conversation, *International Journal of Evidence Based Coaching and Mentoring*, Vol. 2, No 1, Spring, 2004; pp. 68-86. Accessed on December 23, 2014 at <http://ijebcm.brookes.ac.uk/documents/vol02issue1-paper-05.pdf>
- Braybrooke, D. and Lindblom, C. E. (1970) *A Strategy of Decision: Policy Evaluation as a Social Process*, Free Press, New York.
- Callaos, N. (1976a) "Ordinal Collective Decision Making," Internal Publication, University of Texas at Austin, Operations Research Group, Austin
- Callaos, N. (1976b) "Conceptual Development of a Sociopolitical Information System," *Unpublished Dissertation*, University of Texas at Austin, Dec. 1976.
- Callaos, N., (1980a) "Conceptual Development of a Sociopolitical Information System;" In *IEEE Proceedings*, USA, 80CH1555-2, pp. 835-845.
- Callaos, N., (1980b) "Political Participation Systems," *Meeting of the International Union of Local Government*, Munich, Germany
- Callaos, N. (1981) "A Collective Decision Making Approach for the Analysis of Complex Social Systems;" *CORS-TIMS-ORSA Joint National Meeting*, Toronto, Canada
- Callaos, N. (1992) "A Systemic 'Systems Methodology' ", *6th International Conference on Systems Research, Informatics and Cybernetics*. August 17-23, 1992. Baden-Baden, Germany.
- Callaos, N. (1995a) *Metodología General de Sistemas*, Work done for the ascension to the maximum academic rank (Titular Professor) of the University Simón Bolívar. Trabajo de ascenso a Profesor Titular de la Universidad Simón Bolívar.
- Callaos, N. (1995b) "Significance of Synergic Designing Methodologies", *the 8th International Symposium on Synergetics*. January 13-20. 1995. Bangkok, Thailand.

- Callaos, N. (2014) The Notion of Notion, posted at <http://www.iiis.org/Nagib-Callaos/The-Notion-of-Notion/> and [http://www.academia.edu/4415647/The Notion of Notion](http://www.academia.edu/4415647/The_Notion_of_Notion)
- Callaos, N. and Callaos, B. (1992) "A Systemic Methodological Support for Information Systems Analysis and Synthesis", *36th Annual Meeting of the International Society for the Systems Sciences*, July 12-17, 1992. Denver, Colorado, EE UU.
- Callaos N. and Callaos B. (1994) "Conjoined Co-Evolutive Incrementalism for Information Systems Development", *38th Annual Meeting of the International Society for the Systems Sciences*. June 14-19, 1994. Asilomar, Monterey, California, EE UU.
- Callaos, N and Callaos, B. (1995a) "Incursive Control Applied to Information Systems Development" *14th. International Congress on Cybernetics*, sponsored by the International Association for Cybernetics. August 21-25, 1995. Namur, Belgium.
- Callaos N. and Callaos, B. (1995b) "Information Systems Development Effectiveness and Efficiency", *39th Annual Meeting of the International Society for the Systems Sciences*. July 24-29, 1995. Amsterdam, Holland.
- Callaos, N. and Callaos B. (1995c) "Effectiveness and Efficiency in Information Systems Development" presented at the Focus Symposium: Information Systems Analysis and Synthesis: ISAS '95, in the context of Intersymp '95: *5th. International Symposium on Systems Research, Informatics and Cybernetics*, August 16-20, 1995. Baden-Baden, Germany.
- Callaos, N and Callaos, B. (1995d) "Toward a Practical Methodological Theory", *1995 IEEE International Conference on Systems, Man and Cybernetics*. October 22-25, 1995. Vancouver, Canada.
- Callaos, N and Callaos, B (2014) *Toward a Systemic Notion of Methodology: Practical Consequences and Pragmatic Importance of Including a Trivium and the Respective Ethos, Pathos, and Logos*, to be sent for publication, unedited versions has been posted at <http://www.iiis.org/Nagib-Callaos/Toward-a-Systemic-Notion-of-Methodology/>
- Callaos, N and Horne J. (2013) "Interdisciplinary Communication," *Journal of Systemics, Cybernetics, and Informatics*, Vol. 11, No 9: 23-31
- Callaos, N., Callaos, B. and Lesso, W. (1981) "Mathematical Solution to the Voter Paradox," In *Applied Systems and Cybernetics*, Vol. 2, Edited by G.E. Lasker; New York: Pergamon Press
- Callaos, N., Sánchez-Callaos, B. and Lesso, W. (1999) "A Sociopolitical Information System for a New Constitution", *Proceedings of the World Multiconference on Systemics, Cybernetics and Informatics*, Volume 1, pp. 103-108.
- Callaos, N., Evans, R., Lesso, W., and Callaos, B. (2001) "Group Decision Support System for System Design" Plenary Keynote Addresses at the *5th World Multiconference on Systemics*,

Cybernetics and Informatics, and published at
[https://www.academia.edu/4436851/Group Decision Support System for System Design](https://www.academia.edu/4436851/Group_Decision_Support_System_for_System_Design)

Churchman, C. W., 1971, *The Design of Enquiring Systems: Basic Concepts of Systems and Organization*, New York: Basic Books, Inc. Pub.

Castro Laszlo, K, 2001, "Learning, Design and action: Creating the Conditions for Evolutionary Learning Community," *Systems Research and Behavioral Science*. Vol. 18 No. 5, June 2001; John Wiley and Sons, Ltd. Also posted at
http://archive.syntonyquest.org/elcTree/resourcesPDFs/Challenges_and_opportunitie.pdf
(Accessed on December 23, 2014)

Fortnow, L. and Gasarch, B (2007), *Computational Complexity*, Blog at
<http://blog.computationalcomplexity.org/2007/11/unrefereed-does-not-equal-bogus.html>

Frantz, T. G., 1995, "Message To Newcomers -- The ISI Story", In ISI Newsletter, Vol. 1, No 1, April 1995, p. 3. Also published (and accessed on December 22, 2014) at
<http://www.systemsinstitute.com/?s=frantz>

Glanville R. (2011) Introduction: A conference doing the cybernetics of cybernetics. *Kybernetes* 40(7/8): 952–963. Available at <http://tinyurl.com/cf-cfp-composing/glanville2011.pdf>

Lindblom, C.E. (1959) "The Science of Muddling Through". *Public Administration Review*, Vol. 19, NO. 2: 79-88.

Lindblom, C.E. (1990) *Inquiry and Change: The Troubled Attempt to Understand and Shape Society*. Yale University Press, New Haven.

Miller, G. E. (1956) "The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information," *Psychological Review*, 63, 81-97. Accessed on December 27, 2014 at <http://psychclassics.yorku.ca/Miller/>

Pask G. (1979) Against conferences: The poverty of reduction in SOP-science and POP-systems. In: *Proceedings of the Silver Anniversary International Meeting of Society for General Systems Research*, London, August 1979. SGSR, Washington: xii–xxv. Accessed on December 21, 2014 at
<http://www.univie.ac.at/constructivism/journal/special/composing/pask1979.pdf>

Pask, G. (1980) "Development in Conversation Theory: Actual and Potential Applications," *International Congress on Applied Systems Research and Cybernetics*, Acapulco, Mexico, Dec. 12-15, 1980. In George Lasker (ed.) *Applied Systems and Cybernetics*, Vol. III, New York: Pergamon Press, 1981, pp. 1326-1338.

Shapiro, S. (2004) Follett Conversation 2004 - Call for Participants and Themes, accessed on December 23 at <http://www.learning-org.com/04.02/0016.html>

Schön, D. A. (1983) *The Reflection Practitioners: How Professionals Think in Action*. Basic Books Inc. USA

Scott B. (1982) "The Theory of Conversations," in the "The Cybernetics of Gordon Pask, part 2" *Int. Cyb. Newsletter*, 24, pp. 479-491; accessed on January 2nd, 2015 at www.cybsoc.org/scottonpask.doc

Simon, H. A. 1955. "A Behavioral Model of Rational Choice." *Quarterly Journal of Economics* 69: 99-118.

The Century Dictionary and Cyclopedia, 1911, Twelve Volumes, The Century Co., New York.

Woodhouse E. J. and Collingridge, D., 1993, "Incrementalism, intelligent trial and error, and the future of political decision theory," *An Heretical Heir of the Enlightenment: Science, Politics and Policy in the Work of Charles E. Lindblom*, Vol. 724. Accessed on December 27, 2014 at <http://homepages.rpi.edu/~woodhe/pdfs/redner724.pdf>