



## Information systems in health: a conversation with Pedro Urra González

Sistemas de información en salud:  
diálogo con Pedro Urra González

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**ABSTRACT** In this conversation, which took place in Havana in October 2010, Pedro Urra González recounts the creation of Cuba's Sistema Nacional de Información en Ciencias de la Salud (National Information System in Health Sciences) during the 1960s and the founding of the Infomed project in the beginning of the 1990s. He describes the epistemological frameworks which supported the development of Infomed as a cultural and social process and as a place of confluence of different types of thought, based on a theory of knowledge oriented to respond to the needs of practice and transformation. Grounding himself in a conception of information systems as human, social and historical constructions which cannot be treated as artifacts disconnected from the reality that embeds them, he analyzes bibliometric indicators, the Open Access movement and such regional projects as the Scientific Electronic Library Online (SciELO) and the Red de Revistas Científicas de América Latina y el Caribe, España y Portugal (Redalyc).

**KEY WORDS** Information Science; Information Systems; Information Management; Access to Information; Cuba.

**RESUMEN** En esta charla realizada en La Habana, en octubre de 2010, Pedro Urra González narra el contexto de surgimiento del Sistema Nacional de Información en Ciencias de la Salud de Cuba en la década del '60 y del proyecto Infomed, del cual fue fundador, a inicios de los años '90. Describe los fundamentos epistemológicos que sustentaron el desarrollo de Infomed como un proceso social y cultural, como espacio de integración de los esfuerzos del conocimiento, basado en una teoría del conocimiento orientada a responder a las necesidades de la práctica y la transformación. A partir de su concepción de los sistemas de información, entendidos como construcciones humanas, sociales e históricas que por lo tanto no pueden ser trasladados como artefactos desconectados de su realidad, analiza los indicadores bibliométricos, el movimiento Open Access y los proyectos regionales como la Scientific Electronic Library Online (SciELO) y la Red de Revistas Científicas de América Latina y el Caribe, España y Portugal (Redalyc).

**PALABRAS CLAVE** Ciencia de la Información; Sistemas de Información; Gestión de la Información; Acceso a la Información; Cuba.

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## PRESENTATION

On October 20, 2010, during the hurricane season and under a hot sun, we arrived at the National Medical Sciences Information Center (CNICM, from the Spanish *Centro Nacional de Información de Ciencias Médicas*) of Cuba in downtown Havana. Our purpose was to interview Pedro Urra González, director of the CNICM and of the Infomed network coordinated by the CNICM. This visit was possible thanks to the *Proyecto de cooperación técnica entre países Cuba-Argentina 2010: Desarrollo de procesos editoriales en ciencias de la salud* (Technical Cooperation Project between Cuba-Argentina 2010: Development of editorial processes in health sciences), which was supported by the Pan American Health Organization. We had met Pedro briefly during a previous visit, at which time we had scheduled this meeting. We knew that from 1992 and until the end of 2010, he had worked as the director of Infomed and at the same time had been an information systems development consultant for the United Nations (UN), the United Nations Development Programme (UNDP), the World Health Organization (WHO), the Pan American Health Organization (PAHO), the Latin American and Caribbean Center on Health Sciences (referred to as BIREME) and UNESCO. He had also served as a consultant in the digitization processes of the National Library of the Argentine Republic, the National Library of Venezuela, and the Library of the Universidad Central de Venezuela; collaborated in the projects *Health, information society and developing countries* and *Internet, telematics and health* coordinated by the European Commission DG XIII; and participated in the international Beta Test for the evaluation of the *Batch Internet to NLM Intercommunication System* (BITNIS) for deferred access to the MEDLINE data bases of the National Library of Medicine (NLM) of the USA.

We walked up the beautiful stairs of a stately manor from prerevolutionary times and waited for him in his office. Soon Pedro came in, a smile on his face: he had just received a phone call from the PAHO offices in Washington informing him that he had been selected as the

new director of BIREME. Congratulatory hugs and celebratory words marked the beginning of our meeting and lent a special tone to our conversation, ending his 19 years as the director of Infomed.

**Salud Colectiva:** *What is Infomed and in what context did it arise?*

**Pedro Urra González:** Infomed (a) is the name we use to identify what initially was a project to incorporate network services and electronic information access into the National Information System in Health Sciences. It began to take shape at the end of 1991 and started working in 1992. I say that it is the name we use to identify the project because it has been a construction, in fact we have explicitly considered it as a social, cultural, constructivist process, as the development of a place for scientific and technical information in health.

Infomed was born in 1992 as a response to the crisis that began in Cuba in that decade, which of course dealt a hard blow to the system of scientific information that had traditionally been based on the pillars of printed publications distributed by mail and a national information system characterized by large quantities of subscriptions to international journals. This means that there was already a national network of information, but very early on technology such as the internet, which was not yet massified, started to be incorporated. Although the political intention was to continue to maintain the medical journals in print during the crisis, this was impossible in practice because by 1993, the resources and the possibilities had run out; so, in 1994 we started publishing the journals in an electronic format.

Infomed was the name suggested during that time. I have even defended, in historical terms, the very origin of the name. We cannot precisely say who gave it that name, it arose collectively, in the process of creation, and I believe that is part of its essence.

Today, we understand it as a network of people and institutions from Cuba as well as from other countries, who work together to build capacity, to manage the information needed for health in a process of construction and capacity development.

It was born within the CNICM, which was created in 1965 to accompany the formation of the National Health System and since its origins has been conceived as a national information system to support the health system. So, Infomed appears as an area in which to use information and communications technology to support those processes. But in practice it has extended, transformed, and today we have a network of national reach that supports that national information system as a construction, we see it from that perspective, with the mission of articulating that network in order to develop capacity in the institutional, material sense and also in the sense of processes and ways of doing. It has bypassed its original content, now not only does Infomed belong to the CNICM or to an institution, but all the people and institutions that help build the project are also a part of Infomed.

**SC:** *In a paper you presented (1) you relate Infomed with a complex system, and quote Rolando García and constructivism. What is the connection you see between these concepts and authors and information systems?*

**PUG:** Rolando is an extraordinary epistemologist who had the opportunity to work with Piaget and who is a Marxist in his conception of the world. He had to leave Argentina to escape from Onganía's dictatorship. He came from the Universidad de Buenos Aires (UBA), with all the clarity of the Latin America of those times, or at least of the left-wing progressive movement. You know that he has published many books. *El conocimiento en construcción* (2) was published quite some time ago and recently, I have found his book *Sistemas complejos* (3) in which he systematizes his thought. That was a very special discovery, it was almost serendipitous. I was visiting a bookshop in Madrid with one of my friends, who is a professor of sociology, and it was on the first shelf we went to so we bought it. Actually, she gave it to me as a present. I quoted him because, in practice and also from an epistemological, theoretical point of view, we have always tried to make that process explicit. The process of construction of Infomed identifies itself as a social, cultural, constructivist process, in the Marxist sense of the transformation of

practice, as a space in which to integrate all the efforts of knowledge production. That is to say, a theory of knowledge oriented to respond to the needs of practice and transformation. In Infomed the practical tasks gave rise to cognitive tasks, while at the same time recognizing the fundamental role of knowledge in that transformation and in the intentional exploration of that construction.

When I discovered Rolando García, and especially when I read the book *Sistemas complejos* (3), his thoughts fit very well with concepts we had been developing. Logically, this also has its roots in the thought of Lev Vygotsky, Alexei Leóntiev and that good Russian tradition of the time of advanced social thought in education, psychology, etc., which has continued to develop outside of those borders and which talks about activity theory, that is to say, activities as a group of actions oriented to achieve goals and in which human activity and the construction of the objects of that activity are mediators of the efforts.

Infomed has been an object of a collective construction, but according to García's point of view, it is a complex system. We are talking about a system that is complex not because of its heterogeneity or because of the quantity of its components, but because of the indivisibility of those components and their articulation with the health system. Today Infomed is indivisible; if we are talking about Infomed as an emerging property of the health system in the information dimension, it is very consistent with the theoretical and epistemological perspective that we have been developing and incorporating. We have realized that we need to make that effort even more explicit, which is why we have a research program we want to develop, and why we are working with you, who, beyond the historical relationships that existed in the construction of health processes, are related to that dimension.

Rolando García's work has been very useful and is very important to the region and Latin American culture in terms of the creation of thought and social theory for the transformation of our realities. Infomed, as a complex system, operates as a selection of the scientific-technical information activities that contribute to our objectives, and the theoretical framework Rolando provides helps to prevent that selection

of activities recognized historically and socially as scientific-technical information activities from becoming mechanic, that is, making it the least arbitrary it can be. This fits perfectly with the tradition of Mijailov and other authors from the former Soviet Union that talked about informative scientific activities as an activity system.

Today, within that selection, we include activities that were not always a part of informative scientific activities. We have even opened the door for information production, author contributions, and the production cycle to be incorporated into what we consider to be scientific-technical information activities, with a vision of permeable borders. You really have to build the instruments and connect them to other contributions — as you must do with activity theory itself — and with the tools of other components with the most socio-critical vision of the use of technology, or with the tradition of construction within the fields of collective health, popular education and permanent health education, with the concepts you use that relate to this. But Rolando's genetic epistemological perspective is very rich, in particular his recuperation of Lucien Goldmann and dialectical thought. I discovered Goldmann through Rolando García and I was compelled to read Goldmann's work thanks to some passages of extraordinary power.

By means of Rolando García I also reached the concept of information with which I feel most satisfied today. In *Le dieu caché* by Goldmann (4), in which he uses dialectics to carry out a study of the works of Racine and Pascal, there is a part in which he defines information as "the facts of reality organized according to the system with which we relate to that reality in a social and historical context," and that is the best definition of information that I have been able to work with and socialize, and it did not come from a context specialized in science and information but from a work like Goldmann's which represents dialectical thought in its most elevated state. It is a very flexible yet solid relational definition with which to consider a phenomenon as complex as the social, classist and historical character of information and at the same time is related to a system of concepts, a system of values, an epistemology, a theory and an instrumental system with which you can use

observable data. This socio-critical, historical and constructivist vision has been important to us for interpreting and transforming the reality of Infomed, within a very complex and difficult reality, but in the works I have mentioned we can find some theoretical elements with which to try to formalize an explanation of that construction.

**SC:** *We live in the era of the technological revolution, but the old problems in information systems persist. What is your interpretation of that paradox?*

**PUG:** I don't think it is a paradox. I share the criticism of any concept of technology that ignores its condition as a social relationship, its articulation with the system of social relationships. I think that therein lies the problem. Information systems are most definitely human, social and historical constructions and therefore cannot be transferred from one place to another as if they were devices disconnected from their reality. If you disconnect a device belonging to one reality and you take it to other reality, and instead of 110 volts, you have 220 volts and you do not have a transformer, you go crazy. In that sense, what helped me understand this was the work that comes from the tradition of Adorno, Horkheimer, Marcuse, Foucault, a more socio-critical construction of technology. Actually, we understand information systems as a social construction. Systems are a part of that reality and are historical and social constructions that have objectives and contradictions. This idea is valid for technological systems as well. What is also interesting is the contribution of activity theory and the reappropriation of that theory by Northern Europeans due to historical circumstances: the Russians who went to Nordic countries created schools and a network began to form. There is a Finnish school with an important author, Yrjö Engeström, who has worked with activity theory, has extended and enriched it, and he provides a more critical view of the construction of systems as activity systems. I see that we are in a period of transition in which one of the needs we have is to research in order to consolidate knowledge based on our practice, but also to continue to develop knowledge. In that regard, activity theory together with the more

critical social view of Rolando García, etc., gives us tools in which the systems that do not work are often systems decontextualized from their realities and they are seen as technology not articulated with that context. This more critical view, more connected to a process of liberation than instrumental — although it has instrumental dimensions — and more adapted to the social constructions that you want to carry out, would be the basis of systems that work in a better way. At the same time, not only do the technical dimensions need to be well mastered, but also the place that the devices hold within the social systems and its interaction with them.

I recently read something that I liked very much and that Goldmann also states very well: the better a system is articulated with the reality it intends to represent and transform, the more likely that it will more or less work well; but the main challenge is assuring that the decisions you make take inputs from that reality and continue to transform it, in accordance with its nature. That is to say that the structures, functions and strategies are in a kind of harmony. That process, which is also transformative, that

dynamic of the constituent and the constituted, those dialectics, can be the path of information systems that learn, that transform themselves and adjust themselves to the needs of the social spaces that create them. This is what Infomed explicitly seeks.

I believe that we have to recover the use value, the social value of things; because they are ways of not getting lost in this postmodern madness that makes people run after senseless things. Recovering the idea of activity — understood in the sense Leóntiev gives it, activity as actions directed towards the achievement of goals that we construct socially, not in the sense of crude materialism, but rather in the sense of objectives with which we want to build — can give social construction another rhythm, in which we don't need to be desperately trying to constantly renew the systems, towards something that is just the result of a society that functions with other motivations, with dynamics of the market, of merchandise. It's a dynamic which is clearly no longer analog, we can't follow that, now it is digital and no one will be able to follow it if we do not reconsider the way in which we relate to it.



Pedro Urra González. Havana, Cuba; 2010.

I support Langdon Winner's idea of unplugging. In Infomed, we have always defended the idea of being able to unplug ourselves, that is to say, that we could dismantle ourselves and that would not be a tragedy, what is important is the capacity of the system to connect and disconnect according to its needs; to defend even the concept of a national space of information, of a specialized space, the informative space one needs that coexists with other activity systems but that has non-metastatic limits.

In the book *The ghost in the machine* — which also inspired the band The Police — Arthur Koestler (5) develops a very interesting theoretical framework about what he calls "holons." They are totalities that simultaneously are a whole and a part; it is the idea of the solution to the conflict of Janus, who was the god with two faces in ancient Roman mythology. You are, at the same time, a part and a whole. Koestler develops the framework of holonic theory, which even started a line of theory in the business world that talks about holonic companies. This inspired a group of us, at a time in which our epistemological and theoretical rigor was more permeable, to build, explicitly, a holonic network. I still cross paths with people who tell me "we are with this holon idea, we are going to build a holonic network." I remember being almost offended by someone at a conference when I was talking about this idea of holons who said that it was a bunch of nonsense. But we were in the process of discovering, of learning. It has a lot to do with Rolando García's ideas, too: the vision of the reconciliation between the whole and the part is always the biggest challenge when you work with information systems, with networks and in life in general; it is that contradiction between what you are as an individual and what you are as a social being, and that is the permanent contradiction that appears at all levels including within Infomed. We are a *network of people and institutions*, we have always understood ourselves that way and we want to defend that idea. And now, we have specified it as a *network of people and institutions that works to build capacities*, incorporating the Marxist tradition, which, later, Amartya Sen reuses and

modernizes by including elements of language. If Marx had had the system as a theoretical tool, he would have worked with systems too.

**SC:** *In a text published in Acimed (6) you quote Jimmy Wales, Wikipedia's founder, and Abel Packer, creator of the Biblioteca Virtual en Salud (BVS) regarding wiki contributions. How do you see the scenario set by these projects, and the tension that these projects create for private companies dedicated to the concentration and distribution of the scientific information?*

**PUG:** I remember that I suggested to the BIREME staff, when they were organizing the Regional Congress on Health Sciences Information, to invite the creator of Wikipedia to talk about that project. Today the story of those processes is clearer, but at that moment, it had a great impact on me and it still impacts me to think about the experience of the social construction of an object of activity like an encyclopedia. Wikipedia as a product, as an object, embodied a group of principles, concepts, ways of working that gave a very important role to certain elements particular to complex, self-organized, emerging and dynamic systems, with all the challenges that this implies. Its evolution took a different course, it still is an open project but with all the imbalances of a network of people and institutions that have the capacity and the possibility of building that space or that collective object.

We have our Wiki and also we construct with the Wiki in Infomed. But this turns out to be another example of a device that replicates, of course, the social relationships of power: Wikipedia has already demonstrated the power imbalances behind its construction, because ultimately the editorial ability is still mediated by the social beings involved in the process. However, it has also shown that it continues to be a space in which social construction can operate to balance an object that is much closer to reality than other similar objects, such as the Encyclopedia Britannica or other encyclopedias which are more openly biased and centralized. In that sense, I think we need to see Wikipedia as a space of class struggle and contradictions but also as more open to that process; it will be the social

struggle and construction that will take this kind of space in one direction or another.

On the other hand, I think that as a model of social construction and production of texts it is a model to consider, to keep in mind, and in our case, to implement it in certain situations might be very interesting. This is what we have tried to do in practice, in the Infomed Wiki, in which the existing systems of social relationships, class and power are reproduced. As you well know, we are historical and social beings, we don't appear out of nowhere, we come laden with of our family, our race, our history, our background, unless there is a deep intention of a conscious and explicit transformation, as was the Cuban Revolution at a specific moment in time. I myself come from a social background that maybe would not have allowed me to be in the position I am today, and many of us in this society are consequences of that profound social transformation, whose permanence depends on a continued struggle; it is a construction that does not maintain itself *per se*, but rather is a profound process. Wikipedia is the same, it has those characteristics, that potential, but at the same time is — like all social processes — subordinated to the regularities or at least to the more general principles of social construction, in which historical, social, and classist elements are present, with more potential for transformation and change than others that have a more centralized and clearer model of constituted power. In that sense, it is more open to a dynamic relationship between what constitutes and what is constituted.

**SC:** *What do you think about the Open Access movement in Latin America?*

**PUG:** Since 1994, in Cuba, there has always been open access, the revolutionary editions were the first massive Latin American process. Not just that, I think that in Latin America there has for quite a while been open access in universities, in social processes. We Latin Americans have a lot of experience with that.

I believe that the general principle is correct: everything we do to defend free — and not just open — access to knowledge, information,

research products, is in line with what society needs. In *The wealth of networks* (7) Yochai Benkler documents very well this issue of free access, of networks, the associated economies of scale and he also shows how from an extremist right-wing point of view in defense of the market, Milton Friedman was one of the witnesses in a trial that took place in the USA that testified against a project in defense of intellectual property rights, where it was demonstrated that it made no sense, even within a market economy, to defend property rights. Intellectual property rights are a historically and socially constructed issue, and even capitalism itself is affected by its defense, so we are not speaking about anything particularly left-wing: the right to free access to knowledge and information are absolutely defensible, especially if it is known that most research is socially funded and so, it is completely consistent with the idea of the commons.

It is interesting that the open access movement came after our own experience, and comes to us recycled. A Cuban specialist carried out an investigation in which she proved that our researchers did not know what the "open access movement" was, because our journals have been freely accessible on the Internet for many years; that is to say, something that has been a natural process in our country comes to us recycled. In any case, we of course coordinate with the movement, we defend its principles, it is a public good that has to be developed and promoted. Much of what we receive comes to us recycled: the Web 2.0, concepts, etc. I was just recently discussing this in a conference: they are giving the name "social networks" to the devices, so Facebook is a "social network" and there is a cultural "meme" due to which people end up calling "social networks" things which are not exactly social networks but rather an example of them. In English these are called "buzzwords," they are imposed and many people follow along, repeating them. This of course has its own explanation and those processes should be better understood.

Everything that contributes to the open access to knowledge, to use value, to culture is fundamental to development and is also of nature, what goes against that is unnatural. So, that movement should be defended, particularly



Pedro Urra González. Havana, Cuba; 2010.

its essential elements, which would precisely be free access to knowledge. To make it more complete, efforts should be made so that people can enjoy that free access, because it's not only about access but also about people having the ability to gain access effectively because they possess the economic conditions, time, etc. to do so.

Silvio Rodríguez, who is a poet and a born communicator, constructor of messages and obviously of songs, has found in the blog a permanent space of communication. In his blog *Segunda Cita*, he happens to include something written by García Lorca that says that if he were hungry and had to beg, he would not ask just for loaf of bread but rather he would ask for half a loaf of bread and a book; the book for him is the open access to information. It is very nice because it is Lorca's manifesto in defense of the access to knowledge and open access, of the development of the capacity that allows people

to gain access to knowledge and that makes the thirst for knowledge the most important need.

Infomed is to some extent that attempt: to develop capacities in people that make it so that they cannot live without access to knowledge or the search for the best knowledge that has been accumulated. It is also a process, things are not always in that ideal state because, although the knowledge is there, or rather, information is there — because knowledge is within people — that doesn't mean that people use it. But it's a process that cannot be decontextualized. You could have the best information system but that has nothing to do with your reality, that does not recognize, for example, that most primary care doctors basically use their coworkers as references and consult text books rather than scientific journals, so, it has to be seen how books can incorporate the material within journals, how they are based on scientific evidence and how those equations can be solved.

**SC:** *How do you see SciELO and Redalyc in that context?*

**PUG:** The Scientific Electronic Library Online (SciELO) is a project that originated in Brazil and was later spread through the region by means of the Pan American Health Organization (PAHO) and that has moved forward in articulating a group of Brazilian and Latin American journals to offer open access. In our case, we already had open access, so SciELO for us meant regional articulation and the incorporation of additional tools. It is an important regional project because it works for the integration and visibility of the scientific production of Latin America.

The Scientific Journals Network in Latin America and the Caribbean, Spain and Portugal (Redalyc, from the Spanish *Red de Revistas Científicas de América Latina y el Caribe, España y Portugal*) is a project that is more typical of these times of orchestrating existing values or of leveraged growth. That is to say that SciELO was constructed from below, while Redalyc took advantage of a situation, historical even, in which those full texts were already accessible on the Internet. On the other hand, the uncertainty in which we are moving makes it so that certain groups or people with vision, with tools can orchestrate processes that put them in a very interesting position basically by adding to and integrating with what others have constructed. I think that Redalyc's success is based on those principles.

For example, everything that is in SciELO, Redalyc orchestrates with other tools and capacities, even with a livelier dynamic than the one used by SciELO. In fact, it has been emerging as an important space very quickly. It is an example of what the new dynamism of this uncertainty can mean and it can generate positive things, but it can also produce power imbalances. This automatically endows those who coordinate the space with a certain ability to gain positions or spaces of representation in the name of all those who have produced the articles, etc., and if it is not socially constructed and it is not negotiated and it is not clear what the contribution of each is, this can lead to a concentration of resources, of mixed symbolic and representational meanings that have not

been negotiated with all those who form part of the network. Considering these characteristics is an ethical issue, for projects like Redalyc as well as for the SciELO project itself.

**SC:** *Are those the uncertainties you refer to?*

**PUG:** Exactly. For example, what does open access mean? It means that you can take all the riches that have been socially created and you can reuse them with the pretext that they are not being used, but the person that coordinates them is in fact concentrating them and can be creating value in this system of relations without redistributing it to those who participated. I am not talking about Redalyc or SciELO specifically, I'm talking conceptually. Connections represent power within the Internet; the individual reasoning of an editor, for example, is that he wants his journal to be seen, but at the same time the resources that can be generated from that orchestration end up being used to gain relationships that are not clearly distributed. It is a contradictory, interesting process of uncertainty because it is emerging in this very moment and it has to be deeply understood, mainly for us to be able to defend the dimensions related to public goods and to the balance of power and wealth that are inevitably associated with any of these processes. There are things that the capitalist system, due to its nature, launches at a dynamic that is unable to be controlled, including regarding public goods. Not being aware of this can be dangerous because it can create unnecessary inequities.

We have already gone through this with the free market movement; we have to be very careful in the intellectual sense, in the sense of values and projects, and we have to be aware that whenever we speak about the free access movement it may not be clear what kind of freedom we are talking about.

So, we go back again to the famous issue of value, in a Marxist or non Marxist sense. We talk about free access but we are forgetting that behind that free access there are people working, producing and who spend many hours doing mental and physical work in order to achieve a certain objective and that can be ignored because the type of relationship that is established obscures them, make them virtual,

make them disappear. I am not saying that we should give up those types of projects but we have to be aware of those dimensions and construct a space of participation and consensus if we want to move forward in regional and international cooperation.

**SC:** *In this discussion, what is the analysis you make about the scientific and technical indicators in the North-South relationship?*

**PUG:** The same thing happens. All those indicators, all those ways of relating to reality are mediated by value systems, by the epistemological foundations with which we relate to reality, that is, what we recognize as what is known and how it is known, by the theoretical elements that are concrete and therefore instrumental.

If we contextualize the impact factor, it may be perfect for chemistry, but may be absurd for a certain social science; it may be useful for a mature community that has been built itself in terms of the construction of knowledge, but not for a community that does not even have a paradigm constructed. In that sense, I think that those indicators have to be seen within a system of concepts, within a system of values, within an explicit epistemology and within a process of social and historical construction. One of the most extraordinary contributions of culture is the recognition of the role of history. In decisions as elemental as the analysis of a basic human situation, what human beings in search of justice naturally do is to look to the history of processes, to understand the conditions in which people live, who their mother is, who their father is and where they live. The historical dimension has to do with that. If you go back to the 40s, it is completely different from what it is today, and if you look at one specialty and it is not the same as another. In information sciences, for example, all Birger Hjørland and Jack Andersen's production on the theory of knowledge, even the recognition and scientific demonstration of concepts, citations, have spaces of knowledge control in which one does not cite another, it is consistent with the theoretical and epistemological vision that Rolando García defends and which comes from the enriched

Marxist vision in the sense that when doing an analysis there is grounding in the historical, the social, the concrete, the objective.

**SC:** *This analysis would include all the bibliometric indicators, such as the impact factor...*

**PUG:** Exactly, especially taking into account the evidence that exists on that. They are social constructions, constructions of power. This does not mean that citation indicators are not important. Indicators are useful, I would even say that they are indispensable, but they are just that, indicators.

It's about giving a place to a piece of information, which is basically something observable, and about giving it a place inside an intention, inside a constructed object. A non-positivist relationship with these indicators is a mature one. Culture, as a synthesis of what we are as human beings in all of our dimensions, also incorporates science, and science includes these dimensions as well, which means that we cannot talk about science without these elements; we cannot speak about these indicators abstractly. However, we continue to be positivist even in our most basic decisions. This is positivism seen decontextualized, and induction continues to be carried out in the most elemental way, explaining relationships without any system of concepts behind it. I think it is a cultural issue. I recently read a text by Graziella Pogollotti, a Cuban woman with an extraordinary mind, in which she takes up the concept of culture used by Carpentier and I liked it very much: culture as the ability to integrate.

What I find fascinating in Rolando García's work is Piaget's idea of continuity in the knowledge process, which is also Marxist, but with the idea of stages. That is, there is both scientific and pre-scientific thought and you can live your whole life without passing on to the next stage; like a child who passes through stages, the stages are qualitative.

**SC:** *Going back to the issue of indicators, don't you think there is a certain pressure on the part of the companies that concentrate the production and distribution to uphold this discourse?*

**PUG:** Yes, of course. I am not a person who believes that those are linear processes. I consider that it is an important variable. But, for example, in the case of tobacco, with all the pressure the tobacco companies exert, the countries that have advanced the most are the imperialist ones. We have to learn from those processes. We still have a long way to go, the state monopoly does not necessarily guarantee that the path will be easier, because the interest and power groups work effectively. Welcome to the world of social and class struggle! Unfortunately, whether we like it or not, society is the site of the struggle, and as long as in that social struggle the great majority and their interests prevail, and that struggle moves toward the improvement of the human race, that struggle will take on another kind of color.

What is clear is that the companies that seek profits need the indicators in order to function. But I think that there are people who believe in the impact factor, I think there are elements, areas of knowledge and experiences that talk about the importance and viability of these indicators in certain contexts. The indexes sometimes help to expose intellectual immodesty.

I am a big defender of traceability and of indicators, this may seem to be a contradiction, but I am a defender of everything that we can represent in indicators. Che Guevara was a defender of this too, and there is no contradiction. The problem arises when one thing is masked with another. There are contexts in which the impact factor or the H-index is an ordering process, which does not mean that the quality is guaranteed, but I am also interested in the traceability of intellectual production processes in which the state of knowledge, of the social realm, etc. says that at least using that is more organized than having no control at all.

At a massive level, when it becomes means of living for many people, and public funds are involved, there have to be some elemental indicators that provide order and necessarily we will confront that bias. The main thing is to assure that the decision-making processes, the processes of project construction and evaluation, remain social, participatory processes capable of judging those issues and that do not reach a conclusion or a judgment

using a number or an index; but you do have to take it into account.

Power is built with that. An interesting example is the cybermetric indicators. Within this idea of uncertainties, there are people who have made a ranking of universities orchestrated on a leveraged growth, which is a particularity of the state of capitalist development and the world system at the moment. Globalization provides these kinds of opportunities. It offers them in a good or in bad way; it is not neutral. There is a new phenomenon that we have to understand and which consists of scales, flexibility and uncertainties that can create huge processes of wealth and power concentration, as a result of the high volatility of information processes that make them very associated with power. These people have become a world-wide center of reference for university rankings, such as the *Human Development Report* of the United Nations which was inspired in the concepts of Amartya Sen and has become an element of power, or how Amnesty International has become a force of power in which, at the same time, the interests, contradictions and power of nations are deposited, in which problems are negotiated.

**SC:** *What reflections do you have on these 19 years of management work and what do you see for Infomed in the future?*

**PUG:** We have hardly talked about Infomed, we have talked about more general issues that have to do with its construction. In our projects we have defended that Infomed — as a true social network, as a network of people and institutions — must work towards a better articulation with the health system and with the Cuban society. So, the challenge is to develop capacities that give it sustainability and that even reach, in the future, its inclusion in the health system as a natural part of the processes of construction in health. Some years ago, I heard a distinguished Mexican, who is very related to computing in the region, say that the day that the computer becomes like a pencil we would be in a different dimension, that is to say when it becomes embedded in the cultural and social realms. The way I see it, Infomed's main challenge is to be appropriated

by health care workers and by the Cuban people as an input, a tool or living space necessary for the construction of health and that the dimension of information and knowledge is embedded in those processes. This is very complex because it implies, at a productive technical level of Infomed, guaranteeing the efficiency of the systems, development of the contents, and control of the quality. This will be possible as long as capacity is developed in the sense of infrastructure, of processes such as human resources, so that they become part of the development process in health. When the use, production, processing, analysis, and sharing of information become a part of the culture of Cuban health care workers as something natural to the processes of health construction, then Infomed will be in another dimension. I think that is the way. Now that I am moving towards BIREME and a regional space, I can take that dream to the whole region.

This has practical elements of infrastructure consolidation, of research, in order to be able to generate a feedback loop between ourselves and that reality, with processes of human resources training that are associated to the construction of objects of activity, not just training for the sake of training, but training that is also the result of the needs of

the system itself; that is more less the vision we have been constructing.

In specific terms, it is the new strategic process for 2015; we want to consolidate a system of information and knowledge for health sustained by a network of institutions and people who participate in its construction, a system not just in the sense of representation but in the sense of structure, of relationships. We also want to improve the quality of the sources, services and information products, and guarantee the universality of its access, to develop spaces for continuous learning and research into the management of information and knowledge in health, to continually perfect the technical, logistical and organizational infrastructure and to guarantee its efficient and safe use, to reinforce the interaction of the network with other national and international networks, to achieve the sustainability of the system through the updating and rational use of resources, and to systematically control and assess the functioning of the system according to its goals, which is a dimension that we want to make explicit, that is to say, making accountability a natural element of the process, a permanent critical process. In the end, this is about supporting the health of our communities. These are the ideas we have for the future.

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## END NOTES

a. To learn more about Infomed, visit the website <http://www.sld.cu>

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