

## **INFORMATION SCIENCE: INFORMATIONAL CONCEPT AND DISCIPLINARY INTEGRATION**

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### **ABSTRACT**

The aim of this article is to discuss the constituent aspects of Information Science taking two parameters into account: the informational thought, that identifies the solution given at different historical moments to the questions concerning the access and the use of registered contents, and the extension of the change of modern to post-modern science, when the name of the discipline was coined almost at the same moment as the attribution of traces that resulted in the field's lack of identity. A conceptual synthesis of modern and post-modern science is presented, supporting the recognition of the informational thought of Naudé, Dewey, Otlet and Sola Price. The rescue of ideas showed fruitful, allowing us to recognize important interventions in the area that evidence the dynamics of information, limited by the mechanical reading carried out for years. Meanwhile, it suggests that the concept of disciplinary integration is more appropriate to provide the development of the field.

**Keywords:** Information Science; Informational Thought; Disciplinary Integration; Modern Science; Post-Modern Science.

### **INTRODUCTION**

The advance of the information domain in the last century is undeniable, but its constitution as scientific field has found obstacles. In fact, when referring to it we relate it to important practices, but we do not recognize the concept which constitutes it. The efforts to identify the domain are collided with terminologies that indicate different historic moments of the knowledge production and relate themselves to conceptions, not rare, incompatible. If, in one hand, the imaginary world of knowledge has been changing in a fast way through changes not always perceptible at the moment they install themselves, it is not less true that to understand it in the

contemporaneity demands a scientific attitude that is not involved by typologies that, although they enjoy certain prestige, do not lead to an understanding of the complexity of the construction processes field and information circulation. The objective of this text is to present the elementary patterns of the information field concept to, from the characterizations that make it singular, indicate ways to understand it on its current denomination "Information Science".

No doubt, with the denomination Information Science the field searches to be installed as scientific practice. However, the lack of a minimum consensus about the semantic content of the term indicates that the field concept is yet little discriminating. An example of this is the usual claim that the Information Science object is the information. This proposition, doubtless, obvious and tautological, whose discussion dimension supports do not correspond with the poor results obtained. In fact, the claim of the Information Science field as theoretical and scientific field is implicated by the lack of a consistent source pattern that provides it identity and consolidated development. To develop a reflection about the concept that signalizes a possible identity of Information Science we turn to the way of the modern science constitution, identifying its reflexes in the information field to, then, approach the way of the knowledge production in the contemporary society, named pos-modern, with the intention to propose scientificity parameters that characterizes the *modus operandi* of the domain in the contemporaneity context.

## **2 THE MODERN AND THE POS-MODERN**

Dates from the century XVI the segmentation operation of the knowledge set considered till then on its uniqueness. The achievement of this specialization tendency of knowledge enounces itself in the modernity project, in the century XIX. Its principles, inherited from the French illuminism, lay in the triad "liberty, equity, fraternity". It was believed that the reason, responsible by the prodigious technical and scientific development of the time, would overcome conditions of ignorance, injustice and inequality.

The classic science, mono-disciplinary, that then edifies itself, imposes a rational view of the world. For that, it is turned to a new order, I mean, to a scientific pattern that supposes necessarily the rupture with a common sense and the disposition of objective methodological procedures as a generation foundation of legitimate knowledge. What was in matter, so, was not only a procedure that could better suit to the observation precepts, but the claim of a world view and of being in the world disposed in successive oppositions, since the one that distinguishes the man from nature to the one that causes the rupture between the common sense and the science (SANTOS, 1996, p.12).

In a specific way, the knowledge specialization achieved in the modernity project lay down in two nuclear ideas: the distinction between the subject and the object and the knowledge production disciplined by method. The notions as the dialectic, relativism and the positivism, that emerge as options of instruments to *know*, it proves that the classic science institutes the **method** as protagonist of complexity neutralization. In fact, the modern rationality sees in knowledge a way of reality control, where the necessity of phenomena reduction to its casualty relations. It is, nevertheless, important to stand out that the pattern of the modern science gives priority to the functionality and utility of knowledge. The value assigned to this does not relate directly to its interpretative capacity, but to the possibility to dominate and change the real. It results from this that the knowledge is integrated to the processes, tools and products. The modern world promoted a visible advance of knowledge. Its increasing integration to the productive processes gets to approach the science “to the center of economical social political power, the ones that happened to have a decisive role in the definition of scientific priorities” (SANTOS, 1996, p.34).

Given its constitutive genesis, we bear that the modern science presents an explanation, among many possible, of real. However from an option in a group of possibilities, the modern rationality pattern changes itself in a unique resource. The recognition of the supremacy of this way of knowledge is associated to its strong predictive capacity and to the control which operates in the phenomena. It was established that similar characteristics constitute the main traces of scientificity. We have then, simultaneously the claim of the pattern and the traces determination which integrate the scientific field. Once excluded from the universe of options in

which it should be integrated, the modern rationality pattern mistakes itself with its own scientificity. It is necessary to agree, however, that all this process does not happen at a distance of a valued opinion, which has nothing of impartial.

It is understood from this perspective developed above that the most visible consequence of the scientific rationality of modern science, that is, of knowledge produced in the lately four hundred years, is the naturalization of the real explanation. The reading we do today of real is found strongly associated to the categories of space, time, subject and number – cardinal metaphors of modern physics, according to Roger Jones cited by Santos (1996, p.52). Its presence is marking even when it's recognized its arbitrary and conventional character. The naturalization takes place, among other things, from the distancing of the subject with relation to the object, distancing that, is believed, awards objectivity to the knowledge. This epistemological distinction between the subject and the object hides, consequently, the autobiographic character of the science: hide the routes of subject, scientific society and of shared values and beliefs.

The constitution of the language as object of the saussuriana linguistic is a good example of the modern scientificity. It is considered that the linguistic had its scientific character certificated by the distinction between language and speech, both applied in the language universe. The language is a social product, an invariant, the system, while the speech depends on the individual variations. The structuralism achieves this distinction through the immanence principle and of the definition of the language structure in conformity with the formal method. The language is presented, then, established, static, a propitious object for the determination of the regulative principles of the system.

The language, considered product of an abstraction set, typifies one of the usual resources of the modern scientificity: share and separate, simplifying, to know. Associated to the stability gotten through the scientificity principle, the synchronization concepts, paradigm, isotopy, denotation, etc, organize the object and make it possible the understanding of the principles that rule the system. All that does not take part of the stability is considered marginal, and, consequently, excluded from the study universe. Only the elements said to be indispensable are recognized for the accomplishment of the function assigned to the object. However,

according to Fiorin (1996, p.20), “instable is not disorganized, chaotic” what assigns ostensive simplification to the association between the invariance and the system regularity. The sense effects, for example, result from the change of stable forms in systemic level. The speech, “in spite of obeying to the structure coercions, is from the happening order [...] it is the place of structure instabilities, it is where the sense effects are created” (FIORIN, 1996, p.15).

On this perspective, the speech not only uses the system laws, of the language, as the structuralism wants when claiming that the enunciation is an act of the system appropriation, but also, when using them, create “new ways of saying [...] destabilizes the languages and the uses, unmake differences and create others, reinvent the sense universe, breaks certain sintagmatic coercions, reconstruct paradigms, do and undo” (FIORIN, 1996, p.19). Under this view, the enunciation uses and constitute the language in a stability and non-stability game, that is presented as condition of the sense accomplishment.

For more contradictory it seems, the institution of the object-structure – the language – contributed for the recognition that the separation between the language, its functioning and its production, is a simplification that answers only for identification of the internal organization system, leading to an expansion of the language interpretative target, becoming evident in the expression “language science”. At least such trajectory signalizes that we can not describe and analyze the language at a distance of its productions, the ones which do not organize themselves directly only for the language mechanism. At this concept, the scientificity in the contemporaneousness is not defined by the overcome of the production mechanisms of the modern science, but before for the re-conduction of the knowledge generated to the possibilities universe.

The pos-modern science, in the search for solutions to the problems caused by modern science, is opposed to this one, proposing the knowledge elaboration, at the same time, total and local, determined by thematic. At his concept the two patterns – the modern and the pos-modern are not found disputing the same objectives. The modern fragmentation is disciplinary, the pos-modern is thematic: “the themes are galleries where the knowledge progress to meet each other” (SANTOS, 1996, p.47). The pos-modern knowledge, on the contrary of the modern,

is not deterministic and neither descriptive; it is essentially translator, that is, comprehensive and interpretative. It is defined as a knowledge about the possibilities conditions which, at least, generates methodological complicatedness.

This impasse can be overcome, considering that each method is a language, which answers simultaneously for the proposition and object questioning. Like that “each method is a language and the reality answers in the language in which it is questioned” (SANTOS, 1996, p.48). At this concept, each method reproduces the partiality, the fragmentation, which occurs from the object constitution that is elected. Only a “methods constellation” (SANTOS, 1996, p.48) can overcome – or catch - the silence that is enrolled between them. The pos-modern science is constituted through the “methodological transgression”, yet on the proposal of Boaventura de Sousa Santos (1996, p.48-49), whose traces are:

- **The analogy:** the most important category of intelligibility: the knowledge is developed through analogies, that is, the knowledge is developed through the own knowledge;
- **The methods plurality:** along with analogy, it materializes a communicative situation. Flows originally of many practices interact in constellations. The expression pos-modern is inter-textual: the inter-textually is organized around themes, signaling an undivided knowledge.
- **The scientific written** of the pos-modernity is not presented through a unique style. The scientist composes his style, what means that the interaction subject/object is expressed in a personified manner.

## 2.1 The Subject and the Scientific Object

Although the modern science has left us “a world knowledge that broadened extraordinarily our survival perspectives” [...] [it] teach us a little about our way of being in the world [...] The modern science produces knowledge and unknowledge [...] it turns the scientist a specialized ignorant [and] turns the common citizen a widespread ignorant” (SANTOS, 1996, p.53,55). In fact, changed the society - from the industrial to the knowledge one – it is observed that the reason seems to be insufficient to overcome contradictory situations whose recognition demands interpretative procedures fixed in hybrid methodologies. On the contrary, there is the



perception of a sequence of continuous ruptures and fast that generate fragmentary processes that succumb to the theoretical boards elaborated by the modern science.

One of the fundamental ruptures erected in the pos-modernity refers to the relation subject/object existing in the knowledge generation. In the paradigm of the modern science, the dictomic distinction subject/object elects the man as epistemic subject and excludes him as empirical subject. Otherwise, in the paradigm of the pos-modern science, the subject returns: the knowledge act is inseparable from the knowledge product. The knowledge recovers its place in the cognition and is indelibly associated to the human action. On the contrary of the knowledge associated to the external world, existent in the production processes and in the products benefiting the being in the world, in the contemporaneousness, the **knowledge is the proper way of insertion in the world.**

The modern science (the scientific rationality) was constructed against the common sense, considered superficial, illusory and false. It lacks, at this point, conceptual system to deal with the fragmentation, with the place, with the specific, at last. The pos-modern science, on the contrary of the modern science, recognizes that any form of knowledge is necessarily superior to the others. All knowledge is translation and translatable, making it possible the articulation, between the different ones. This because what matters is the comprehension or the understanding of the investigated object. At this point it is not rejected the rationality pattern, but it is recognized its limitations. The dialogue between the ways of knowledge recomposes the world complexity, essential for its understanding. For the knowledge society, the modern science, mono-discipline, is insufficient, imposing itself the need to elaborate new strategies to the approach of problems able to produce critical studies. Then, the overcome of the modern rationality does not imply necessarily the negation of its function or the exclusion of its results, it is only need to recognize its limits.

### **3 THE INFORMATIONAL CONCEPT**

It is observed on this brief exposition, the approach importance of the object notion, and that the same is not limited to some definition, for more universal it is. But

it is observed more: what we name object is actually a point of view, a filter adopted by the problematic of the world phenomena. The comprehension of the Information Science field collides with insuperable obstacles in the attempts to recognize its object, possibly because, on one side, it is supposed to find it perfectly identified in the world and, on the other side, it is expected to obtain its definition which is universal and discriminating. Like that, it turns simultaneously to the simplification and the naturalization to which leads the modern reason, claiming that the field object is the information. The definition in the case is not only tautological – it is clear that the Information Science object is the information – but it also imposes an epistemological circularity that impedes the discussion advance.

The option, on this context, for the Information Science association to the pos-modernity parameters does not result either in immediate and perceptible advances. To integrate it to the inter-disciplinary does not award it any identity, because both it and the methodological transgression are not redundant in discriminating resources, are, actually, before, resources shared by the disciplines that are integrated to this pattern.

Another possibility, that is not pure reductionism, consists in observing how in the past the domains that are in the origin of the Information Science organized themselves. We take only two: the Modern Librarianship marked by the concept of M. Dewey and the Documentation proposed by P. Otlet. In common, both were protagonists of the application as mote of its activity: it was organized the collection for service assistance the same way the contents were organized to the document recuperation. Translated for the current moment, such conceptions prove that the concepts “collection”, “document” and “recuperation express the way through which each one of the fields causes a problem to the question of the information in the contexts which the respective authors were introduced. There is not, then, an object in the traditional sense.

In fact, considering that the information recuperation is the objective of the documentary process, what bear is that information is not presented as object, but as a point of view adopted to analyze the processes and world objects. But only this is not enough to identify the field. For the Documentation, the document is associated to a material support where it is introduced registration. In the contemporary society,



this definition is limitable, once that the qualitative demanding of the information is imposed in an increasing way. Occurs from this that the document should be also considered the place of the sense registration. The sense attribution is the structure function, that is, of the system. The objective of the Information Science field, at this point, is the formulation of significant systems of registered contents with the purpose to recuperate information. Such significant systems constitute the qualified information to recuperation and the use of the original contents. For that, such systems work as social memory.

On the adopted perspective, it does not proceed to talk about Information Science object, but about point of view, once that its objective is determined by the informational perspective. In such case, an initial characterization of the domain should be searched in what we named informational approach of the world.

### **3.1 A Time Line of the Informational Concept**

The term “Information Science” appears, in a reiterated way, associated to the crisis generated by the insufficiency of the rationalist view of the world. Beyond this finding it becomes indispensable to rescue the concept that supported the field conformation along time. This rescue will be exemplified through the analysis of theoretical-pragmatic proposals of four vertex of the field concept: Gabriel Naudé, Mevil Dewey, Paul Otlet and Derek John De Solla Price.

In 1627 Gabriel Naudé submits to the Paris Parliament President an audacious project entitled “Advis dresser une bibliothèque” [Advice to organize a library] (NAUDÉ, 1876). After long exposition about the political importance concerning the creation of a big library, to “crown” and “serve as ornament” of the politic taken to effect by the Parisians’ Parliament (NAUDÉ, 1876, p.13), because the delivery to the “big” public of beautiful libraries attributes a very lasting splendor to any governor (NAUDÉ, 1876, p.12), the author starts to describe his view about the library. That is for public definition and a progress instrument, which should keep distance both from leisure reading and the bibliophilism. Its collection, for the balance of the choice made should reflect the different chains of concept, without

dogmatism. At this point, the “Advis” represents more than a librarianship manual: its interests reside in the aspect that was sometime relegated to the forgetfulness: a manifest in favor of the progress idea, the liberty of expression and the culture. Naudé retakes on his “Advis” the figure of rich big libraries of the Eighteenth Century. Being a librarian of Richelieu and afterwards Mazarin, the same could exercise his conception of library buying collections that gave rise to the France National Library.

The intransigent defense of the “public library”, opened to all (however, at that time, “the lettering public” was certainly restricted) leads Naudé to emphasize his principles of the collection choice: this should be “universal” and represent the different chains of concept. It is abandoned, then, the exhaustive ideal of documents that reigned, for example, at the Alexandria Library or at the medieval libraries, substituting it by an exhaustion of ideas. The liberty, in Naudé’s view, is exercised when the man has unrestricted **access** to a wide range of opinions, different among themselves, concerning the same question: the discerning comparison and free of prejudice between different information allows, still according to the author, to elaborate rational choices. Beyond this politic collection, “Naudé also understood that the universal character of the library had clear limits: not being possible, already at that moment, to collect all the books of the world and being thus imperious to accept a partial view of knowledge, the option was to admit, at the library, the biggest possible number of catalogues which mentioned to the interested where he could find the searched work in case it did not exist in that place” (COELHO NETTO, 1997, p.77).

The model of Naudé’s library incorporates a dynamical dimension that separates it from the preservationist aspect, or patrimonialist, that until nowadays guide the conception of the wide portion of population about the library function. The Naudé’s library is the result of a political project: the “substitution of the spiritual authority of the church by the ‘cultural machine’ that was the library” (COELHO NETTO, 1997, p.78). In 1627, Naudé proposed a library where the information access fertilized the free think, that is, **the public utilization of accumulated knowledge** as the progress input: this project was forgotten.

Centuries after, the modernity redoubles in the society, from the opening of the libraries and museums occurred in the French Revolution, gave origin to the art

and culture secularization and in the creation of a cultural market, which prevailed from the democratic value attributed to the education responsible for the establishment and propagation of the new rationality. It is at this context that emerges one of the most vigorous manifestations of the Modern Librarianship, undertaken by Melvil Dewey.

Beside his worry with the organization of the libraries, that makes him create a classification system irrespective of a physical localization, Dewey searches to introduce and consolidate essential actions to the insertion of the Librarianship field in the modernity universe. In 1876 it is proposed the creation of a national professional association – American Library Association. In 1887 establishes a Librarianship school. Takes part of the foundation of the magazine Library Journal and founds the Library Bureau with the objective to normalize the librarianship economical equipments and methods (CACALY et al., 1997, p.182). The most interesting aspect of his multiple activities refers to his performance in the reference sector of the libraries, clearly committed with the modern values of the human kind development. As director of New York State Library, Dewey creates collections and private services and organizes movable libraries to the rural zone, extending in a considerable way the social and segmented performance of the libraries. It is possible to claim that the actions developed by Dewey established all the demanded conditions to characterize a specialty area: the **collection** as object, its organization and the reference processes, unified in the **services** and its institutionalization of the obtained profession through two ways: the teaching and the professional associations. The Modern Librarianship has its specialty associated to the processes of collection creation and to the ways to change them in services.

Almost simultaneously, Paul Otlet and Henri Lafontaine establish the Documentation from the passion they had for the bibliography, associated to pacifist convictions. In 1985 they proposed the elaboration of the Répertoire Bibliographique Universal (RBU), with the objective to list all the published work since the invention of the press (CACALY et al., p.446). To classify – and relate – the RBU contents, they create in 1905, the Universal Decimal Classification, associating to the documents organization the function to provide the access to their own contents, emphasizing on them its informational dimension and the correlations between themes (or

information, or, even, documents). Besides it is the document idea wider than the one of a book, which allows the recognition of multiples supports of informational contents that will benefit all and any human activity.

Observe that eight principles of Documentation establish a rupture with the Dewey Modernity, at the emphasizing the importance of information access in detriment of its utility: “the objectives of the organized documentation consist in being able to offer about all kind of fact and of knowledge documented information. 1. universal in relation to its object; 2. reliable and true; 3. complete; 4. fast; 5. up-to-date; easy to obtain; 7. previously reunited and ready to be communicated; 8. being available to the highest nº of people ” (OTLET, 1934, p.6).

Otlet moves away from the modernity parameters at the conferring an intrinsic value to the information and knowledge. This claim may be corroborated by 2 proposals contained in the *Traité*: the monographic principle and the development of the Universal Decimal Classification.

Otlet grants a last purpose for the documentation: the synthesis work of information. The information collect, its description and analysis, are considered a way to achieve the documentation purpose: at the synthesizing the information, to turn its reading simple, fast and reliable, making that men have access each time to more information in a shorter time.

The documentation purpose, at this concept, is enunciated in the synthesis, and not in the analysis. Surprising for the time, Otlet claims that the language constitute an organizer principle of the knowledge (OTLET, 1934, p.431) and, guided by this conception, he details a strategy to synthesize the information, that is, to generate, in the documentation scope, new information based in stored information. To achieve this conclusion Otlet defends the “ monographic principle” proposing the rupture between the document content and its support at the advising that the information was taken from the original documents (cut, if necessary) and transcribed (or stick) in cards that, according to thematic criterion, were correlated among themselves. Along with the assistance of the Universal Decimal Classification, Otlet intended to co-relate the information (or the cards) among themselves, elaborating conceptual webs, or informational. Otlet predicted the information web and imagined an agile and dynamical system that would allow him to interconnect the information

according to the need. That was the original function attributed to the Universal Decimal Classification, later relegated to the forgetfulness.

The modernity characteristics resurge, in the sixties, in the Solla Price studies, already associated to the named contemporary Information Science, that emphasizes the qualification and the idea that the past is repeated in the future (SANTOS, 1996 p.17).

Along with the Solla Price the knowledge acquire in rigidity, at the same time that “hides the limits of our comprehension of the world and control the question for the human value at the scientific anxiety this way conceded. This question is however, registered in the own relation subject/object that presides to the modern science, a relation that turns the subject interior to the cost of the object utterance, turning them locked and, non-communicable” (SANTOS, 1996, p.32-33). Interesting to observe, however, that in terms of theoretical pattern, the Information Science, in the perspectives of the Solla Price studies, follows the modern rationality principles. But in chronological terms, it is found inserted in the pos-modernity context.

Considering the modern rationality model that establishes the method supremacy and of the quantification to the complexity reduction, with the consequent establishment of laws to find the process functioning, we bear that the “accumulated advantages theory” by the De Solla Price is inserted easily in the modernity scientific paradigm, at the postulating that the social facts should be reduced to their external dimensions, observable and mensurable. This understanding, however, is not done at a distance of two contradictions that seem essential. The first of temporal order: the theory foundations were cast in the sixties, time when the modern knowledge already presented signs of degenerateness. The second is related to the theoretical perspective of the De Solla Price thesis, when this, from a big number of empirical investigation, searched to establish the theoretical foundations of Information Science (CACALY et al., 1997, p.182) emphasizes the quantification as way of complexity reduction.

The modern Librarianship, attributed to Dewey, gives its functional and utilitarian character, proposes itself as an important assistant of the modernity project, contemplating inclusively its democratic character. Not committed, in its principles, in relation to the theoretical boards of modern science, the modern

librarianship, defined as service, erects a half-activity in the assistance of the classical science. But the activity is the area limit, configuring only the existence of a practical knowledge, quite identified with the knowledge of the common sense, turning it impossible, in fact, the assimilation of the Modern Librarianship to a way of mono-disciplinary knowledge dictated by the modernity source. In a certain way the assistance role of the Modern Librarianship does not make it possible the disciplinary autonomy conquer. In the century XX, the Librarianship is stood as technical, opposing itself to the knowledge. As technical, it imposes itself as instrument and ignores possible questions that should formulate.

The Documentation seems to be a unique case. In the “*Traité de Documentation*” Otlet establishes organizational ways of contents to allow access and recuperation of information. There are methods and the objects, but the function is not an intervention in the real but its comprehension, its systematization. The Documentation approaches the source of the Modernity concept through rigidity and methodological rules, but from it moves away by the value given to the knowledge, what in a certain measure justifies the qualification of the visionary attributed to Otlet (RAYWARD, 1997; RIEUSSET-LEMARIÉ, 1997). The approximation each time higher of the Documentation to the modern scientificity model has its origin, probably, in the knowledge importance already produced in the scientific knowledge generation each time more specialized and objective, with wide capacity of reality manipulation. The specialized Documentation, developed in the private environment take, each time more, the contents under an unique view, the one of its utility. The technological advance dependent on the scientific knowledge, demands, to start out, a strategy to face the quantitative accumulation of information. The Documentation is simplified, being changed to treatment technique of documents quantity, a not committed service, alienated of the principles proposed by Otlet.

Besides it is just the idea of document, substituting the one of a book, and that would be in the future the foundation for the information notion, which allows the recognition of multiple supports of contents, expanding geometrically the possibilities of culture registration. Moving away, in on hand, from the knowledge utilitarianism advised by modernity – what associates the otletiano concept to ways of production of the pos-modernity – and approaching, on the other hand, to the supremacy idea of



the method registered in his declaration of the eight principles of documentation, Otlet breaks with the Modern Librarianship, and at the same time, will investigate, from the partial interpretation attributed to his work by the future readers, the idea of the fragmentation of the future field of Information Science. Actually, a usual interpretation of the Otlet project, at the reducing and vulgarizing his concept to a classificatory technique, leads him to deny it as conceptual vertex of Information Science erecting the Documentation only as technique. It is observed, at this movement, that the point of view that prevails over the otletiano concept is the one of the modernity enunciated in the technique supremacy.

The following board-review synthesizes the ideas exposed above:

<b>Time Line</b>	<b>Example</b>	<b>Information Social Function</b>	<b>Predominant Characteristic</b>
<b>Till the end of century XIX</b>	GABRIEL NAUDÉ (1600-1653) – Erudite Librarian <ul style="list-style-type: none"> <li>▪ Organizes Libraries of the dominating class and concedes a public library</li> <li>▪ The diversity of concept chains should be present in the libraries</li> </ul>	<ul style="list-style-type: none"> <li>▪ The information reinforce the power</li> <li>▪ The library along with the privileged space of the erudition and the expression liberty</li> <li>▪ The person and his power</li> </ul>	<p>ACCESS <b>ERUDITION</b></p> <p><b>MODERNITY</b></p>
<b>End of century XIX, Begin Century .XX</b>	MELVIL DEWEY (1851-1931) – Modern Librarianship <ul style="list-style-type: none"> <li>▪ Librarian services for segmented users</li> <li>▪ Search for the practical</li> <li>▪ Librarianship establishment (teaching and professional association)</li> </ul>	<ul style="list-style-type: none"> <li>▪ The information as a means of development</li> <li>▪ The library as assistant of the modern science</li> <li>▪ The person and his informational needs</li> </ul>	<p><b>UTILITARISM</b> <b>COLLECTION SERVICE</b></p> <p><b>MODERN RATIONALITY</b></p>
<b>Between -wars 1934</b>	PAUL OTLET (1868-1944) – Documentation <ul style="list-style-type: none"> <li>▪ <b>The organization of information as constitution of a web</b></li> <li>▪ Emphasis in the information, in detriment of the document</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>The information with the purpose on itself: the information generates conditions to bring the peace</b></li> <li>▪ <b>The need of the society information</b></li> </ul>	<p><b>ACCESS AND RECEPTION</b> <b>ADAPTABILITY TO INTERCHANGEABLE NEEDS</b></p> <p><b>MODERNITY AND POS-MODERNITY</b></p>

Decade 60	<p>DEREK JOHN DE SOLLA PRICE (1922-1983)</p> <ul style="list-style-type: none"> <li>▪ The quantification as option of rigidity</li> <li>▪ Probability studies – “theory of the accumulated advantages”</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>The information as input of the information, emphasizing his repercussions in terms of success</b></li> <li>▪ <b>Information is success/power of people or groups</b></li> </ul>	<b>MODERN RATIONALITY</b>
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It is observed in these four approaches of the field (Naudé, Dewey, Otlet and De Solla Price) not only the existence of a linear overcome among themselves, but also the enunciation of a terminology that difficult to insert them in interpretative boards. The board presented is revealer of the field ruptures that will answer by its fragmentation. As a result two constitutive variables – the chronological and the conceptual – do not manifest themselves sympathetically, enunciating the complexity as chaos or disorganization. One of the possibilities to recognize the concept of the area is just to construct the taxonomies that found the presented vertexes, enrolling them in the processes of production of knowledge. Along with it, it is obtained de codification forms of knowledge with its posterior temporal and pragmatic enrollment. It is necessary to observe that such hypothesis run into that usually utilized whatever it is to face the Information Science as an autonomous process in the pos-modernity environment, not linked to the elaboration of a historic-informational concept.

Beyond the historic evidence pointed, it is observed that currently the area relates itself both to the organization of scientific and professional practices and to the accompaniment of changes in the cultural practices and in the modalities of diffusion and acquisition of knowledge. At this concept, the informational approach - or the informational concept – can be observed from the following aspects:

- Narrow link with the industrial society actions, formulating services to the public and private strategies;
- Trans-versatility, achieved in the propensity in operating articulations between separated fields;
- Availability in interconnect problematic deriving from theoretical distinct chains.

The board presented is revealer, because it presents the difficult to recognize a concept continuously elaborated about the information field. That is, it does not

recognize the autonomous concept that led the actions in the area. Before answering the question about the kind of model that supported the proposal of the Modern Librarianship and of the Documentation, we already had the conviction that the area only accomplished an analogy between the internal and external order, with the purpose to propose a practical and efficient action. Even so, it is possible to identify in this action qualities of the rationalist model: the objectivity of the technical procedures, the affection to rules, patterns and norms and the neutralization of the subject in the process of making. However, in themselves not linked to the process that build them, such qualities crystallize themselves in the tradition, in a not memorable time and place, that the reflection does not penetrate and that the science does not recognize.

#### **4 METHODOLOGICAL TRANSGRESSION AND INTER-DISCIPLINARY**

The inter-disciplinary character of the Information Science is rarely discussed by bibliography, generally simply claimed. It becomes necessary, however, and despite the bibliographic consensus, to contextualize the claim in face of the constitutive concepts of the domain, so as to reveal the sense attributed to the named “inter-disciplinary”.

As big amount of words, “inter-disciplinary” is an ambiguous word: designates not only pedagogical strategies but also reflection processes about thematic of different natures. It seems, at this concept, to present a common trace, whatever is to reunite the knowledge obtained by successive divisions inside the modern rationality.

It is found out, however, that the terms “pluri-disciplinary”, “multi-disciplinary”, “inter-disciplinary” and “trans-disciplinary” tend to be evaluated of several ways, nevertheless it is not always recognized the fact that they integrate “a long family of words all linked by radical discipline” (POMBO, 1994, p.11). Olga Pombo defends the thesis according to which the concepts of “pluri-disciplinary”, “multi-disciplinary”, “inter-disciplinary” and “trans-disciplinary” should be “understood as moments of the same continuous: the progressive process of disciplinary integration” (POMBO, 1994,

p.11). According to this thesis, the difference between the concepts can be enunciated in terms of a minor, or higher, integration among disciplines, starting from the “pluri-disciplinary (also named “multidisciplinary”), characterized by the approach among several disciplines. The “interdisciplinary characterizes the “group of multiple possible variations between the two extremes [the pluri and the trans-disciplinary]” (POMBO, 1994, p.12), that is, any “combination between two or more disciplines, with view to the comprehension of an object from the confluence of different points of view and bearing as final objective the elaboration of a synthesis relatively to the common object” (POMBO, 1994, p.13). The “trans-disciplinary” should be understood, yet according to the author, as “the maximum level of disciplinary integration”. Then it would deal with the unification of two or more disciplines having for basis the explicitness of its common foundations, the construction of a common language, the identification of structures and common mechanisms of comprehension of the real, the formulation of a systematic and unitary view of the sector more or less broadened of knowledge (POMBO, 1994, p.13).

Face to the reiterated claim according to the which the Information Science is characterized as an inter-disciplinary science, let us try to deepen this claim, at the context of the “continuous of the progressive disciplinary integration” proposed by Olga Pombo.

The inter-disciplinary, understood as a conceptual composition that defines aprioristically the nature of a disciplinary – enunciated, for example, in the claim that the Information Science is an inter-disciplinary science – is a way of approach that imposes more problems than solutions.

The problems relate themselves, already in the beginning, to the determination of the fields that they dialogue with the science that is to be defined. Not rare, nevertheless, the defense of this point of view collides with insuperable difficulties in the identification of the converged disciplines, but also in the elaboration of the conjunction points to be considered. In a way, this disciplinary has little with the amplification of the object comprehension, itself many times precariously identified, relating itself only to vague and erratic associations of concepts and methodologies of different origins that worth more as an exercise than as a field comprehension.

Like that, the interdisciplinary seems to signalize more to the need of identification of the object complexity, complexity this whose approach demands the interdisciplinary. The identification is not mistaken with the simplification, because it demands the elaboration of questions that each field recognizes as theirs. The interdisciplinary is not a trace of the object and neither of the area. It turns to be an approach strategy of the complex objects, a configuration of pluralities of methods erected by the researcher whose action reveals interpretative possibilities that propose themselves as answers to the question that deflagrates the investigative process.

At this concept, the interdisciplinary knowledge is not merely descriptive, it is not presented as operation that aims the equalization and generalization. It constructs itself as translator activity, founded in several languages, about a determined theme.

Assuming that the Information Science operates as social ways of explicitness of knowledge, producing circulative information, we have to admit that the information is each day more imperceptible because, despite the geometric growing of the information industry, only one part of the informational activities is externalized. This is one of the most serious questions put to the Information Science and it is concerned with disciplinary vocation, whatever it is the one to determine production, circulation, insertion ways and documentary information use. At this context, a possible work program for the information domain should contemplate the following elements:

- The articulation between the technological devices of information and the information production and the sense generation;
- The social insertion of information, with determination of local conditions of reception, aiming the devices improvement. Activity study of users-consumers;
- Identification of defined codes of knowledge under a way of information e of the conditions that presides its conception and accomplishment;
- Sociological, political and economical dimension of the informational activities;
- Study of changes occurred in the mediation processes.

Around these questions the area produced interesting results, signaling clearly the existence, in its interior, of pluralism between methods, techniques and reflections. On this route are found questions of practical nature, as the one of libraries automation, and others more reflexive, related to the consumption and mediation ways of informational products. The same way the Librarianship and the Documentary Linguistic are up-to-date as sub-areas of this same area, although the first is related more directly with the procedures proposition and the second with documentary language construction methods. The area is constituted in the relation of sympathy between theoretical contribution and systematization of conceptions that depend directly on the professional and social activity. For the formation and the production of knowledge, the more adequate focus of approach should be the field pluralism and not its interdisciplinary, that is, emphasizes the “pluri-disciplinary”, aiming to reach an “interdisciplinary”. The “interdisciplinary” suggests, for a while, invariably a defensive point of view, adopted in the supposed lack of the area identity, that is then at the mercy of the mechanical use of models that area strange to it. At the administrating its own pluralism, the area will be more questioned, more criticized, what indicates that its objects start to be taken in consideration. Its analysis will be confronted with other analysis that taken in consideration paradigms that are their own. The set of the informational activities – professional or scientific – can not be reduced, for example, to technological processes, dependents, therefore, exclusively of the Informatics. The question is that the area operates with symbolical processes that can not be decomposed in elements that come to be duplicated by machine. The subject is necessary, to rescue its reason and its intellect is essential in the constitution of the researcher and the professional.

Retaking the “trans-disciplinary” concept by Olga Pombo, it becomes unnecessary to underline that the Information Science does not fill – by then- the explicitness conditions supposed by the concept, that advises the elaboration of a synthesis between several disciplines in what matters, particularly, to the construction of a common language.

As claimed above, the pos-modernity is not characterized essentially by its interdisciplinary, but by the growing crises and degenerateness of the modern scientific concept, imposed by the disciplinary source. Actually, the intelligibility of the



real, established by de modernity paradigms, confronts broadly to the changes that the knowledge has tried in the recent decades.

According to Wersig (1993) the main changes are:

1. **Knowledge not personalized.** Originally established in the substitution of the speech by the written and currently increasingly turning potential by the communication technologies, the knowledge source turns less evident, displacing to a perception of the locus information of the generation for the use, each time more personal. For the Information Science this leads inevitably to the discussion of the offer segmentation, predicting then the local use of information;
2. **Knowledge credibility.** Determined by observation technology. Each time more the techniques and the research methods get sophisticated, in a way that the knowledge evidence turns something difficult to be proved by other people;
3. **Knowledge fragmentation.** The continuous knowledge expanding has generated increasing volume of knowledge, whose configuration answers by pluralism of world views, determining the difficulty of dialogue in the scientific field and the difficulty to articulate it.
4. **Knowledge rationality.** Along with the world complexity, to the information technologies compete to reduce it. The calculation and the quantification turn to control scientific rationality.

In the scenery above traced the rational knowledge can not be processed through the modern science procedures. The way out, according to Wersig (1993), for the Information Science, should contemplate the presupposed that the information is the knowledge in action, reiterating, without mention it, the oletiano set of ideas. It is just this change – the information – that supports a specific action in a specific situation. It competes to the Information Science to establish knowledge segmentations – metadata and taxonomies – each time more refined, with parameters of social use in the widest sense of the world. Through this it can sign rules, and systems, for the dealing of the information in the context of the not personalized and fragmented knowledge, making people able to develop other rationalization means.

In a scientific way, the Information Science should be directed by the need to solve or to deal with problems. It is understood that the problems occur due to the complexity and the contradictions of the own knowledge and that it is necessary to oppose ordering structure which allow to change it into information – responsible by

the generation of effective and subjective knowledge. To do so, the theoretical field of the Information Science should be organized around three essential elements:

1. Development of methods for each one of the theoretical perspectives, recognizing its pluralism;
2. Confrontation between concepts, whatever they are original or borrowed, establishing the autonomy of its language and constructing, in fact, its interdisciplinary;
3. Development of strategies of use and information mediation .

Example of the first element are the themes relative to the flow analysis and information recuperation in organizational contexts, analysis of knowledge structures, evaluation of information technologies along with suggestions of alterations, evaluation of the informational effect of knowledge presentation. On the second we have the elaboration of the conceptual system of the domain, with its characterization by the adherence to the field and operation. Examples of this are the representation concepts and of the system, the latter, not more as reunion of actions, but of actors. Finally, the strategies just can be established in a conceptual consolidated board, in order to not become standardized prescriptions, but calculations logical-pragmatic along with identifiable variables. The elements above numbered retake – partially, it is true – the concept of the “methodological transgression”, proposed by Boaventura de Sousa Santos and discussed in the item 2.

On this board the Information Science object is not the most tangible – the knowledge – it is not any longer the support or the local, but something tangible – the information represented in several formats of organization.

## **5 CONCLUSIONS**

The investigation of the constitutive concepts of Information Science, to judge by the display here discussed, allow to enunciate some conclusions – temporary, in fact – systematized in the hope to fertilize future discussions about the theme.

An approach merely chronological of the constitutive concept of the Information Science does not point to an overcome movement of the previous

moments. Mentioned in another way, the chronology reveals itself insufficient to clear the concept evolution of the area. As seen, there is not linear development between the modern science and the pos-modern. As the latter advises the linear transgression it is legal to suppose that the same include the modern science procedures. Under this view the relation between the two paradigms is not the one of opposition but of expanding along with inclusion.

On the other side, it is also found out, that the line of the informational concept does not constitute materially, seen that each author elects an approach without opposing it to other approaches or emphasis. For example, in 1627, Naudé gave priority to the access to the information which should represent a diversity of concepts chains, at the end of the century XIX, Dewey emphasized the bibliographic collection and the organization of services to segmented users. Almost in the same period Otlet promoted a rupture between the content and its support, emphasizing the access and the information reception. However, this sample traces of reflection are lost and appear under new clothing on the account, not rare, of other disciplines knowledge. As we can observe, the history of the constitutive concept of the Information Science bundles, at least, three lines of concept previously ignored. Mentioned in other terms, the Information Science, guardian of the preservation of the social memory, does not attribute to the owing importance, its own memory.

Finally, due to the deficiency above pointed (insufficient chronology and line of informational concept not materialized), forceful is to find out that the Information Science enunciates itself in a fragmented way and not rare turns to the “interdisciplinary” as scientificity alibi, since it is not, as seen, a criteria that attributes it identity. Instead of provide an alibi, a true interdisciplinary will allow to comprehend the area object in all its complexity.

## REFERENCES

CACALY, S. et al. (Org.). **Dictionnaire encyclopédique de l’information et de la documentation**. Paris: Nathan, 1997.

COELHO NETTO, J. T. **Dicionário crítico de política cultural**: cultura e imaginário. São Paulo: FAPESP/Iluminuras, 1997.

FIORIN, J. L. **As astúcias da enunciação**: as categorias de pessoa, espaço e tempo. São Paulo: Ática, 1996.

NAUDÉ, G. **Advis pour dresser une bibliothèque présenté à Monseigneur le Président de Mesme**. Paris: Isidore Lisieux, 1876. Available in: <<http://gallica.bnf.fr>>. Access in: 16 nov. 2001.

OTLET, P. **Traité de documentation**: le livre sur le livre, théorie et pratique. Bruxelles: Editions Mundaneum, 1934.

POMBO, O. Interdisciplinaridade: conceito, problemas e perspectivas. In: LEVY, T.; GUIMARÃES, H.; POMBO, O. A interdisciplinaridade: reflexão e experiência. 2.ed. Lisboa: Texto, 1994, p.8-14. Available in: <<http://www.educ.fc.ul.pt/docentes/opombo/mathesis/interdisciplinaridade.pdf>>. Access in: 12 mar. 2004.

RAYWARD, W. B. The origins of information science and the International Institute of Bibliography/International Federation for Information and Documentation (FID). **Journal of the American Society for Information Science**, v.48, n.4, p.289-300, 1997.

RIEUSSET-LEMARIÉ, I. O. Otlet's Mundaneum and the international perspective in the history of documentation and information science. **Journal of the American Society for Information Science**, v.48, n.4, p.301-309, 1997.

SANTOS, B.de S. **Um discurso sobre as ciências**. 8.ed. Porto: Afrontamento, 1996.

WERSIG, G. Information science: the study of postmodern knowledge usage. **Information Processing & Management**, v.29, n.2, p.229-239, 1993.

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Article received in: 2007, July

Article accepts in: 2007, August